



AIR FORCE HANDBOOK 10-222, Volume 4
1 AUGUST 1997

**ENVIRONMENTAL
GUIDE FOR CONTINGENCY
OPERATIONS**

DEPARTMENT OF THE AIR FORCE

Operations



**ENVIRONMENTAL GUIDE FOR
CONTINGENCY OPERATIONS**

This handbook summarizes the actions and responsibilities of engineer forces with respect to environmental operations associated with contingency situations. It discusses environmental management activities during predeployment, beddown, sustainment and redeployment time frames. These time frames are addressed in the context of deployments and exercises in the United States, deployments to overseas US installations and deployments to non-US installations overseas.

	Page
Introduction	5
1.0 Air Force Goals and Environmental Policies	7
1.1 Goals.....	8
1.2 Policies.....	10
2.0 Environmental Laws and the Squadron	13
2.1 Sources.....	13
2.2 Uniform Code of Military Justice (UCMJ)	15
2.3 Civil and Criminal Penalties	15
2.4 Overseas Environmental Baseline Guidance Document (OEBGD) and Final Governing Standards (FGS).....	17

OPR: HQ AFCESA/CEXR (Mr Joseph H. Smith)
Certified by: HQ AFCESA/CEX (Colonel Randall L. Turner)
Pages 200/Distribution F

	Page
3.0 Duties and Responsibilities	19
3.1 Individual Responsibilities	19
4.0 Environmental Programs	21
4.1 Steps to Responsible Environmental Stewardship	21
4.2 Hazardous Waste	24
4.3 Hazardous Materials Management	26
4.4 Solid Waste Management	27
4.5 Non-Hazardous Liquid Waste Management and Water Resources.....	28
4.6 Spill Prevention and Response	29
4.7 Air Pollution	31
4.8 Natural and Cultural Resources	31
4.9 Pollution Prevention and Conservation	32
4.10 Pesticide Management.....	33
4.11 Air and Surface Noise.....	33
5.0 Risk Management during Contingency Operations in the United States	35
5.1 Contingency Operations	35
5.2 Predeployment.....	37
5.3 Initial Beddown	45
5.4 Sustainment	50
5.5 Redeployment.....	54
6.0 Risk Management During Contingency Operations at Overseas DoD Installations.....	65
6.1 Contingency Operations	65
6.2 Predeployment.....	67
6.3 Initial Beddown	74
6.4 Sustainment	79
6.5 Redeployment.....	84

	Page
7.0 Risk Management during Contingency Operations at Overseas	
Non-DoD Installations	93
7.1 Contingency Operations	93
7.2 Predeployment	95
7.3 Initial Beddown	102
7.4 Sustainment	106
7.5 Redeployment	111
8.0 Environmental Risk-Assessment Matrices	119
8.1 Environmental Areas	120
8.2 Squadron Operations	120
8.3 Risk Impact Value	121
8.4 Application of Environmental Risk Assessment Matrices	122

FIGURES

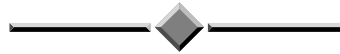
4.1 Hazardous Waste Marking	25
4.2 DoT Hazardous Materials Label	26

TABLES

1.1 Environmental Excellence	11
5.1 Contingency Compliance	36
5.2 Contingency Environmental Compliance	60
6.1 Contingency Compliance	66
6.2 Contingency Environmental Compliance	90
7.1 Contingency Compliance	94
7.2 Contingency Environmental Compliance	116
8.1 Environmental Risk Assessment Matrix	121
8.2 Water Pollution Example	124
8.3 Overall Environmental Risk Assessment Format	125
8.4 Risk Categories	126

Page**ANNEXES**

ANNEX A. References/Acronyms	129
ANNEX B. Environmental Impact Analysis Process for Contingency Operations.....	135
ANNEX C. Key Laws	139
ANNEX D. Environmental Risk Assessment Matrices	147
ANNEX E. Minimizing Risks during Contingency Operations	171
ANNEX F. Organizational Responsibilities.....	183
ANNEX G. Environmental Contacts for Deploying Units.....	191
ANNEX H. Index.....	193



INTRODUCTION

The United States Air Force (USAF) is committed to achieving and maintaining environmental quality to ensure long term access to the air, land and water needed to protect US interests. Maintaining a high level of environmental quality during contingency and training operations presents a difficult challenge. All USAF personnel involved in these operations have a role to play in protecting the environment in these special contingency situations. This handbook is designed for those personnel.

By illustrating methods of integrating environmentally responsible practices into contingency operations, the handbook presents practices that can minimize adverse impacts to human health and the environment and maximize compliance during contingency operations. These strategies are designed to reduce or eliminate negative impact on mission accomplishment caused by health hazards and regulatory non-compliance. It outlines these strategies for exercises, deployments, military operations other than war (MOOTW), and armed conflict within the US, at overseas Department of Defense (DoD) installations, and at overseas non-DoD installations, though it does not address contingencies in response to natural or manmade disasters.

The handbook begins with chapter 1, an overview of the USAF environmental goals and policies. Chapter 2 provides a review of applicable laws and regulations within and outside the US. Chapter 3 prevents responsibilities of various functions and personnel are discussed. Chapter 4 provides a detailed review of USAF environmental programs as they apply to contingency operations including: hazardous wastes, hazardous materials and procedures for the management of air emissions, solid waste, potable water, wastewater, conservation, pollution prevention, and spill response during contingency operations. Chapters 5, 6, and 7 outline environmental practices for each phase of a contingency operation. Chapter 5 focuses on contingency operations within the US. Chapter 6 presents scenarios encountered at overseas DoD installations, and chapter 7 does the same for deployments to

non-DoD installations overseas. Chapter 8 provides a self-assessment to identify risks caused by a unit's contingency operations.

The handbook also includes seven appendices listing: the applicable Air Force Instructions (AFIs); a review of the Environmental Impact Analysis Process (EIAP); an overview of some applicable US environmental laws and regulations; tools for completing the risk assessment matrices in chapter 8; checklists to minimize risks during contingency operations; a list of organizational responsibilities; and a list of environmental contacts for deploying units.

This handbook is intended as guidance and, as such, it does not create any rights duties, obligations, or causes of action, implied or otherwise, in any third parties. Nothing contained in this handbook may be construed as an admission that the Air Force has not complied with any environmental law in the past during contingency operations, nor that it intends to violate any such law in the future.



1.0 AIR FORCE GOALS AND ENVIRONMENTAL POLICIES

There are three types of contingency operations addressed in this handbook. These operations include:

- Deployments and exercises within the US: These activities include deployments of forces for training, relocation or armed conflict within the US. The deploying force must comply with Federal, state, local, DoD, and USAF requirements. (Chapter 5)
- Deployments to overseas DoD installations: These include exercises, relocation, and other activities involving the movement of US troops and equipment to a DoD installation in a foreign country or from the US or another foreign country to a DoD installation. Troops must comply with environmental requirements outlined in the OPLAN and may be required to comply with host nation requirements and overseas guidance. (Chapter 6)
- Deployments to non-DoD installations: These include deployments to foreign countries where there is no DoD installation, for routine training exercises, MOOTWs, or to engage in combat operations. (Chapter 7)

Refer to the section that discusses your deployment situation. All sections outline methods of compliance for the following phases of a deployment operation.

- Predeployment: The predeployment phase ensures that the deployment proceeds smoothly through planning and training. Planning environmental strategies prior to deployment ensures greater compliance during all phases of deployment.
- Initial Beddown: The beddown phase usually has the greatest impact on the environment. Typically, compliance during beddown is lower than during other contingency phases, particularly during an armed conflict deployment. This is because the deploying force must focus on mission

accomplishment, which includes setting up structures and equipment needed for the deployment.

- Sustainment: During sustainment the deploying force will maintain its readiness to meet mission requirements and seek to improve environmental compliance.
- Redeployment: This phase consists of restoring the area to its predeployment state, including packing and shipping personnel and equipment back to original locations. Environmental compliance and restoration must be a high priority during this phase as the area of operation is returned to its predeployment state.

Chapter 8 guides the unit through a self-assessment of its environmental practices using environmental risk matrices. After analyzing its impacts on the surrounding area, the unit can implement practices that can better protect the health of its troops and the surrounding resources.

1.1 GOALS.

The goals of the USAF Environmental Quality program during contingency operations are to minimize the risks to human health and the environment while maintaining readiness and accomplishing the mission. Environmental compliance can play a key role in protecting vital resources during a contingency operation. Resources such as personnel, food and water supply, and mission critical supplies must be protected and managed wisely in order for the mission to be successful. USAF goals during contingency operations are broken into four areas.

- Compliance: Meeting all environmental standards applicable to present operations.
- Conservation: Planning future operations to minimize environmental impacts, and managing responsibly the irreplaceable natural and cultural resources held in public trust.
- Pollution Prevention: Eliminating pollution from deployment activities wherever possible through recycling and reuse, material substitution and process change.

- Restoration: Cleaning up environmental damage caused by contingency operations.

These goals closely resemble the USAF's pillars of environmental excellence. These goals, however, have been modified to reflect the challenges and priorities of environmental compliance during contingency operations.

Environmental stewardship must be integrated into every USAF contingency and training operation. Past and present practices can lead to natural resource damage, environmental degradation, and risks to the deploying forces personnel and resources as illustrated in the following examples.

Compliance: Improperly handling of hazardous waste, such as releasing directly to the ground or into nearby water sources, may affect deploying forces' resources and/or resources of the locality and host county. If waste is burned, or not managed or sited properly, pests can intrude barracks and contaminate food supplies, or the air surrounding camp can become contaminated, posing a health risk to personnel.

Conservation and Pollution Prevention: Reuse of certain resources can allow for prolonged periods of sustainment when supply lines are halted. Proper management of natural resources and wastes can reduce claims brought upon the US for degradation of an area following a deployment.

Restoration: Leaving hazardous waste behind after a deployment or not properly restoring deployment areas to their predeployment state can lead to charges and lawsuits against the US Government and result in large costs.

For these reasons, incorporating environmental stewardship into USAF operations is integral to meeting the USAF environmental goals.

1.2 POLICIES.

Although there are limited rules outlining environmental compliance during contingency operations, USAF Instructions (AFIs), which outline policies at US and overseas DoD installations, and Final Government Standards (FGA) provide helpful background information on the USAF's environmental programs and goals. AFIs should be used to assist with integrating environmental considerations into deployment and contingency planning. Annex A lists applicable environmental AFIs.

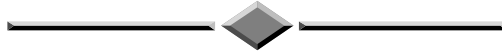
Knowledge of the policies and requirements will assist personnel in incorporating environmental stewardship into their contingency and training operations. Our environmental policies summarized in table 1.1 below are applicable to all training and contingency operations.

Training is integral to successfully and efficiently accomplishing our mission. Environmental stewardship will be an essential element in all of our contingency, training, and mission operations. As a result, our personnel must be knowledgeable and have a clear understanding of the environmental requirements affecting our operations.

Table 1.1 Environmental Excellence.

POLICY	DESCRIPTION
Compliance	The USAF is committed to ensuring current operations comply with applicable Federal, state, and local environmental requirements. This program covers air, water, solid and hazardous waste, hazardous materials, and storage tanks, the community right-to-know, and toxic substances.
Conservation	The USAF is committed to conserving natural and cultural resources through effective environmental planning. This program addresses the environmental impact analysis process and development of base comprehensive plans.
Pollution Prevention	The USAF is committed to preventing future pollution by reducing the use of hazardous material and releases of pollutants into the environment to as near zero as feasible through source reduction, recycling, or treatment methods.
Cleanup	The USAF is committed to cleaning up past contamination to reduce health and environmental risks at each US installation. At overseas locations, the USAF performs cleanup to protect health and safety and to sustain current operations.





THIS PAGE IS INTENTIONALLY LEFT BLANK.



2.0 ENVIRONMENTAL LAWS AND THE SQUADRON

Achieving and maintaining environmental excellence is an important part of the Air Force mission. Air Force adherence to the laws, regulations, and executive orders that apply to current operations is fundamental to attaining environmental excellence. For actions taken within the United States, the Air Force is legally required to comply with the applicable Federal, state, and local environmental laws. Noncompliance violations could result in penalties for both the individual and the Air Force. For actions overseas, DoD and Air Force compliance with the environmental laws and standards of a host nation is set forth in the Overseas Environmental Baseline Guidance Document (OEBGD) or Final Governing Standards (FGS), which require inclusion of requirements from treaties and international agreements, including Status of Force Agreements (SOFAs).

2.1 SOURCES.

Federal, state, and local governments have established laws, regulations and guidance to protect human health and natural and cultural resources from environmental degradation. Overseas, host nation governments may have established agreements with the US that require troops to protect the countries' resources and minimize risks to its environment. Air Force operations will comply with standards set forth in the OEBGD or FGS. Additionally, SOFAs and other country-to-country agreements may stipulate environmental protection requirements for the deploying force where there are no FGS.

2.1.1 Federal Laws.

These laws give state and Federal agencies the legal structure necessary to establish and enforce regulations. Most Federal environmental laws require Federal agencies to comply with related Federal, state, and local requirements. A Federal agency (often EPA) charged with implementing the law will establish regulations pursuant to that law. In addition to these laws

and regulations, Federal agencies are subject to the requirements of Executive Orders issued by the President. Annex C gives an overview of key Federal environmental laws and regulations relevant to Air Force operations. When deploying within the US, contact the environmental function of the installation supporting the deployment to identify applicable requirements.

2.1.2 State Laws (US Only).

Each state has developed and implemented its own environmental laws and regulations. State laws and regulations can apply in addition to or in place of the Federal laws and regulations discussed above. Many of the state regulations parallel Federal environmental regulations and are often more stringent. When deploying within the US, contact the environmental function of the installation supporting the deployment to identify applicable requirements.

2.1.3 Local Laws (US Only).

Local laws and ordinances reflect the concerns of the local communities. They are generally based on Federal and state laws. However, each municipality or community may place more stringent restrictions on certain activities (e.g., noise restrictions during certain hours of the day).

Due to differences in state and local environmental regulations, what is permissible on one installation may not be permissible on another. For instance, some installations in the 48 contiguous states allow “cat hole” latrines, but those in Alaska do not. Therefore, always determine what state and local laws are applicable to your location. When deploying within the US, contact the environmental function of the installation supporting the deployment to identify applicable requirements.

2.1.4 Air Force Environmental Requirements.

As stated in chapter 1, the Air Force has established an Air Force Policy Directive and several AFIs to implement its environmental programs (see annex A). These documents provide specific procedures for environmental planning and compliance. Chapter 7 of AFI 32-7006, *Environmental*

Program in Foreign Countries, outlines environmental requirements for deploying forces. The primary requirement is the development of an exercise or contingency specific environmental plan, as referenced in JCS Publication 4-04. The plan must specify environmental responsibilities, and policies for inclusion in the OPORD or OPLAN as an annex or appendix. At a minimum, the plan should include policies and responsibilities for the following:

- Certification of local water sources by medical field units
- Solid and liquid waste management
- Hazardous materials/waste management
- Flora and fauna protection
- Archaeological and historical preservation
- Spill response

The installation or theater component supporting the deployment can provide resources to assist with the development of this plan. Some related AFIs for environmental programs are outlined in annex A.

2.2 UNIFORM CODE OF MILITARY JUSTICE (UCMJ).

Military members who break environmental laws or regulations can be court-martialed under various sections of the UCMJ such as dereliction of duty, failure to obey an order, destruction of government property, or under the assimilated crimes act. In addition, nonjudicial punishment (Article 15) can be meted out for minor violations.

2.3 CIVIL AND CRIMINAL PENALTIES (US ONLY).

Unit commanders and their subordinates are required to comply with all Federal, state, and local laws designed to protect the environment. The Federal Facilities Compliance Act of 1992 (FFCA) permits federal and state regulators to assess fines and penalties against federal facilities for RCRA violations. It also provides for criminal liability of federal employees under state solid or hazardous waste laws. Violators include the actual person who causes contamination or damage (e.g., to archaeological sites) and the

commanders, supervisors, and leaders who allowed the contamination to occur and did not take immediate action to prevent or correct the occurrence. Administrative or civil penalties range from \$5,000 to \$25,000 for each day of violation.

Administrative penalties are imposed by agencies (EPA or state). Regulators seek larger civil penalties through civil court proceedings. Fines can be imposed on both individuals and organizations, but administrative and civil penalties are normally levied against organizations unless the offender was acting outside the scope of his or her employment. EPA has increased the maximum penalty for many laws by ten percent and has authority to periodically increase the maximum penalty.

Criminal penalties can only be imposed after a trial and conviction, but can result in jail time. Under nearly all of the Federal environmental statutes a "knowing" violation or failure to comply with requirements is a crime. This can occur when an individual illegally dumps hazardous waste when they are aware that is against the law. Some states also criminalize negligent violations.

Those who have exercised due diligence in protection of the environment, commensurate with their level of responsibility, and the magnitude of possible environmental harm that arises from their activities, have little to fear from environmental enforcement. However, all activities must be carefully scrutinized so that the risk of environmental harm and the costs of prevention can be weighed against the potentially substantial penalties that can be imposed. Unit commanders can receive environmental support from higher headquarters

2.4 OVERSEAS ENVIRONMENTAL BASE-LINE GUIDANCE DOCUMENT (OEBGD) AND FINAL GOVERNING STANDARDS (FGS).

DoD policy is to “fully integrate environmental considerations into our defense policy...(and) ensure that we protect the environment during military operations.”

Environmental compliance in overseas locations where there is a designated DoD Environmental Executive Agent is defined by the DoD Final Governing Standard for that host country. In these countries and others, additional environmental compliance considerations may be contained in the country-to-country agreement, treaty, or specific agreement relating to the contingency operation at hand. Planning for contingency operations overseas must not overlook any of these environmental compliance requirements sources.

To help achieve this policy directive, the OEBGD was created. The OEBGD prescribes implementation guidance, procedures, criteria, and standards for environmental compliance. The OEBGD applies to DoD installations outside the US but does not directly apply to ships, aircraft, or deployments. However, Air Force environmental policy dictates that contingency operations or deployments be planned and conducted with appropriate consideration of their effects on human health and the environment. Therefore, deployed units should use the OEBGD or the FGS as environmental guidelines.

DoD requires that FGS must be published for each host nation in which a DoD installation operates. The FGS are developed by the designated executive agent based on the environmental criteria of the OEBGD. The FGS are country-specific, substantive provisions. They are typically technical limitations on effluent, discharges, etc., or a specific management practice with which installations must comply and deployments should comply unless a waiver has been approved. Waivers may be requested if

compliance seriously impairs operations, adversely affects relations with the host nation or requires substantial expenditure of unavailable funds.

When determining proper environmental compliance, the FGS is used in concert with other criteria:

- DoD directives, and
- Service regulations.

The OEBCD should be the environmental reference document used when:

- There are no FGS published;
- Host nation environmental standards do not exist; or
- Host nation environmental standards are not applicable, or provide less protection to human health and the environment than the baseline guidance.



3.0 DUTIES AND RESPONSIBILITIES

Environmental stewardship depends on all Air Force personnel. Each individual can minimize risks to human health and the environment during contingency operations by adhering to the priorities listed below. Individuals may be held accountable for negligent or deliberate actions to the degree permitted by the UCMI, SOFA, or Federal, state or local laws.

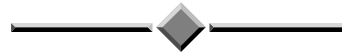
3.1 INDIVIDUAL RESPONSIBILITIES.

Individuals performing readiness actions involved in training and contingency operations have a vital role in protecting the environment. All the planning and preparation for environmental protection during contingency situations will be wasted if individuals do not keep this issue foremost in their mind when performing their duties.

Individuals should always:

- Review contingency and training plans and activities prior to engagement for environmental management requirements.
- Consult their supervisor or environmental coordinator when unsure of proper environmental management requirements.
- Prevent environmental damage and pollution by applying environmental awareness and sound judgment while performing daily duties.
- Advise the chain-of-command on techniques to increase the level of compliance in contingency operations.
- Support the contingency operation recycling program.
- Report hazardous material/waste spills immediately.
- Segregate, label, and containerize all hazardous wastes.
- Apply environmental awareness to daily activities in order to lead by example.
- Administer/participate in environmental training before contingency operations and continue refresher courses during the operations.

- Identify environmental risk associated with tasks occurring on the contingency operation.
- Analyze the impact of environmental factors on mission requirements.
- Integrate environmental awareness in unit activities to identify the environmental effects of plans, action, and missions.
- Coordinate all environmental initiatives through the civil engineer environmental function, or the theater component if the civil engineer is not represented on the deployment.



4.0 ENVIRONMENTAL PROGRAMS

USAF environmental programs apply to all contingency operations. This section provides an introductory review of the various environmental programs and requirements that are relevant to different types of contingency operations. In addition, it supplies background information on various environmental program areas and checklists of recommended actions for minimizing environmental risks during each phase of a contingency operation -- predeployment, beddown, sustainment, and redeployment.

The following environmental program areas are reviewed in the order in which they are most frequently encountered:

- Hazardous Wastes
- Hazardous Materials
- Solid Wastes
- Non-Hazardous Liquid Wastes and Water Resources
- Spill Prevention and Response
- Air Pollution
- Natural and Cultural Resources
- Pollution Prevention and Conservation
- Pesticides
- Air and Surface Noise

4.1 STEPS TO RESPONSIBLE ENVIRONMENTAL STEWARDSHIP.

Actions that protect the environment preserve long-term access to the air, land, and water needed to conduct USAF operations. To implement environmental stewardship in deployments consider the following:

- **Training.** All personnel need basic hazardous material/hazardous waste training if they use hazardous materials or generate hazardous waste. If all troops receive basic hazardous materials/hazardous waste awareness training, they will be less likely to illegally dispose of waste, and more

likely to identify and execute proper environmental management procedures. In the US, training is available through Civil Engineer Environmental and the Bioenvironmental functions on your installation. Types of training available include Hazard Communication (HAZCOM) training, provided by each shop using hazardous materials, and Hazardous Waste Operations (HAZWOPER) training provided by the Fire Department or Disaster Preparedness.

- **Assigning a unit environmental coordinator.** Consider designating one responsible person with central management of all unit-specific environmental issues. Assigning one individual ensures consistent application of standards and procedures.
- **Identifying applicable environmental requirements and site-specific procedures.** Understand what guidance applies within the United States, at overseas DoD installations and at overseas non-DoD installations and who can answer your environmental questions. In addition, ensure that EIAP requirements are met before the exercise or deployment occurs. (For overseas deployments, the theater command will ensure EIAP requirements are met. EIAP is the mechanism to identify actions that could impact the environment. EIAP requirements are explained in annex B.
- **Reviewing the site specific environmental safety and occupational health plan.** Exercise and contingency planners prepare this plan for every deployment. It outlines the site and areas for drinking and wastewater; hazardous and solid waste disposal; materials for reuse/recycling; location of natural and cultural resources; and identifies personnel at the theater component who can address site specific environmental issues.

4.1.1 Environmental Requirements for Contingency Operations.

In all operations, environmental stewardship is integral to the success of the mission. While deploying within the US, comply with all applicable Federal, state, and local laws, and Air Force policies.

When deploying to an overseas DoD installation, use common sense to minimize impacts to personnel and surrounding resources. Model environmental compliance efforts through consultation with the environmental function of the installation supporting the deployment and the OEBGD and the FGS. The Air Force theater component or civil engineer unit supporting the deployment can provide information on whether SOFAs or international agreements mandate certain types compliance.

The situation is similar for deployments to overseas non-DoD installations. In these cases, environmental requirements will be outlined in the environmental annex to the OPLAN.

Guidelines for increasing compliance and minimizing risk to personnel and the surrounding resources are outlined for each environmental program area addressed above. During armed conflict or the threat of armed conflict, the practices outlined in this handbook should be employed to the maximum extent practicable. It will be up to the unit commander to determine what steps must be taken to accomplish the mission and minimize the risks to human health and the environment.

Levels of environmental compliance may vary in each deployment phase. In addition, environmental compliance may not be as attainable during the initial beddown phase of deployments involving armed conflict or the threat of armed conflict as it is during sustainment and readiness exercises.

The following paragraphs outline basic environmental information.

4.2 HAZARDOUS WASTE.

A hazardous waste is a waste, which, if improperly managed can create risk to the safety or health of people or the environment. Technically, a hazardous waste, as defined by US law, exhibits a hazardous characteristic, (i.e. ignitability, corrosivity, toxicity, or reactivity), and/or is listed as a hazardous waste in 40 CFR part 261, subpart D. Ignitable wastes are those with a flashpoint below 140°F. Corrosive wastes consists of acids and bases with a pH less than 2 or greater than 12.5. Toxic wastes include those which include certain levels of specific materials which are harmful to living organisms, such as lead, benzene, and cadmium. Reactive wastes include unstable materials such as munitions and other waste explosive components.

Manage all hazardous waste in accordance with appropriate requirements. At a non-DoD installation, review the environmental annex to the OPLAN. Within the US, consult the environmental function to identify appropriate Federal and state requirements. At an overseas DoD installation, consult the environmental function to identify specific requirements for hazardous waste management. In general:

- A hazardous waste storage area will be established within the base boundary and will be managed by the civil engineer unit (when they are deployed).
- Use the environmental plan established by the Air Force theater component or MAJCOM. It describes procedures for managing and disposing of hazardous waste.
- At a US installation, comply with the policies and procedures of the installation. Most of these requirements will be managed by the environmental function.
- At a non-DoD installation, comply with the environmental annex to the OPLAN

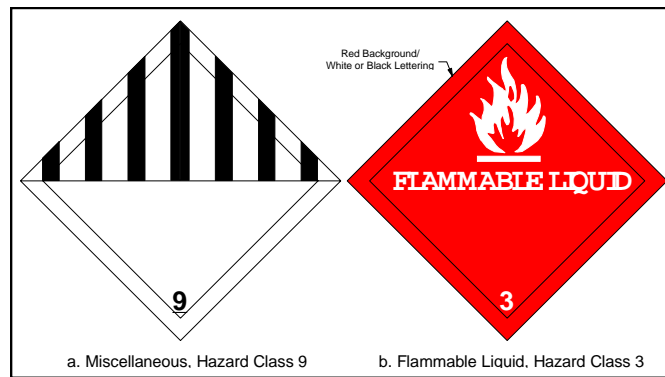
A sample hazardous waste marking is illustrated in figure 4.1. Within the US, this marking is required on each container of 110 gallons or less before transporting off-site. The marking is recommended for use on containers while being stored at accumulation sites at initial (satellite) accumulation

points. Generally, accumulation sites may accumulate up to 55 gallons of hazardous waste or 1 quart of acutely hazardous waste. At a minimum, containers at accumulation sites must be marked with the words “Hazardous Waste”, and containers at satellite accumulation points must be marked either with the words “Hazardous Waste” or other words that identify the contents of the containers (e.g. waste paint). Marking all containers with words identifying the contents as soon as the waste is placed in the drum can save thousands of dollars in unnecessary waste analyses. A DoT label follows in figure 4.2.

Figure 4.1. Hazardous Waste Marking.

HAZARDOUS WASTE	
FEDERAL LAW PROHIBITS IMPROPER DISPOSAL.	
IF FOUND, CONTACT THE NEAREST POLICE, OR PUBLIC SAFETY AUTHORITY, OR THE U.S. ENVIRONMENTAL PROTECTION AGENCY.	
GENERATOR INFORMATION:	
NAME	_____
ADDRESS	_____ PHONE _____
CITY	_____ STATE _____ ZIP _____
EPA ID NO. /	MANIFEST DOCUMENT No. _____ / _____
ACCUMULATION START DATE	_____ EPA WASTE NO. _____
<div style="border: 1px solid black; height: 100px; width: 100%;"></div>	
D.O.T. PROPER SHIPPING NAME AND UN OR NA NO. WITH PREFIX	
HANDLE WITH CARE!	

Figure 4.2. Sample DoT Label.



DoT labels, like those in figure 4.2, are available from the environmental flight, unit environmental coordinator, or Defense Reutilization and Marketing Office (DRMO). These labels will be required on each container of hazardous waste before national or international shipment.

4.3 HAZARDOUS MATERIALS MANAGEMENT.

A hazardous material is one that can cause harm to human health or the environment. Some hazardous materials common to USAF operations include: petroleum, oil, and lubricants (POL); lithium, lead-acid and nickel-cadmium batteries; ethylene glycol antifreeze; solvents; and paints. Proper hazardous materials management significantly reduces the risk of injury and helps protect valuable contingency resources, such as water sources.

4.3.1 Hazard Communications and Material Safety Data Sheets.

The Hazard Communication (HAZCOM) Program requires that personnel involved in the handling and use of hazardous materials receive hazardous materials training. While it is neither practical nor expected to conduct HAZCOM training during contingencies or beddown, common sense dictates

that personnel handling hazardous materials during such situations will have had prior training and experience with hazardous materials and HAZCOM. HAZCOM also requires that a material safety data sheet (MSDS) is available for every hazardous material being used. The MSDS identifies the hazards of the material, associated safety procedures and emergency response techniques. The unit environmental coordinator and supply units must maintain copies of MSDSs for all hazardous materials stored.

4.3.2 Hazardous Materials Management and the Hazmart.

A Hazardous Materials Pharmacy, or Hazmart, is at almost every Air Force installation providing a centralized source of information on hazardous materials. A Hazmart establishes single-point control over hazardous materials over the entire life cycle, reducing oversupply of hazardous materials and the subsequent disposal of discarded material as hazardous waste. While a Hazmart will not be available in every contingency operation, practices implemented at Hazmarts should be employed when feasible.

4.4 SOLID WASTE MANAGEMENT.

Generation of solid waste, for example, construction debris, packing materials, garbage, etc., occurs in all contingency operations. The deploying civil engineer is responsible for managing solid waste disposal. Various options include: landfilling, waste hauling, and burning. The theater component can assist in setting up solid waste contracts, or provide guidance on burning or burying.

4.4.1 Solid Waste Management Options.

The preferred option for solid waste disposal is to use a contractor to haul the waste to an existing waste disposal facility. Contracts are generally negotiated by the theater component. Consult the theater component or the local Defense Reutilization and Marketing Organization (DRMO) to determine whether a contract is in place or being negotiated. Additional options for disposing of solid waste include landfills, recycling, and burning.

4.5 NON-HAZARDOUS LIQUID WASTE MANAGEMENT AND WATER RESOURCES.

The most common types of non-hazardous liquid wastes encountered during contingency operations are gray water and human waste. The unit must implement methods to ensure the proper disposal of these liquid wastes. In addition, the integrity of the unit's water source must be protected at all costs. Improper disposal of hazardous materials, burning of hazardous and solid waste, and inefficient conservation of water sources can have a detrimental impact on the success of the mission. The deploying civil engineer is responsible for managing these wastes.

4.5.1 Gray Water.

Methods available for disposing of gray water include soakage pits, evaporation beds, or a wastewater treatment system. Whatever method you choose, locate it downwind and downstream of all water wells and camp water sources and away from civilian water resources.

- Wastewater treatment system - This is the preferred method for disposal of gray water. However, depending on the length of time and location of the deployment, treatment systems may not always be an option. In many cases, soakage pits or evaporation pits may be required before the wastewater treatment system is constructed. Stabilization lagoons can be used to treat wastewater before discharge when there is sufficient natural drainage to carry wastewater away from the base.
- Soakage pits - Generally used when the soil is porous.
- Evaporation ponds - Used when impervious soils are present.

4.5.2 Human Waste.

Disposal of human waste should take place away from all drinking water wells and sources and must be located downstream and downwind from camp sites and drinking water sources. Methods for disposing of human waste include the following:

- Sanitary waste disposal system - This is the preferred method but not available in many contingency situations.

- Ventilated improved pit latrine (VIP) - The VIP latrine is the preferred method in the absence of a sewage system.
- Burnout latrine - The burnout latrine is best in remote field conditions.
- Pail latrine - The pail latrine is useful when a dug latrine cannot be used.
- Bored hole latrine - The bored hole latrine can be used for small deployments to remote work locations.
- Harvest Falcon latrine

At redeployment, post a sign showing the date of closure and the words "Closed Latrine". Locate all latrines at least 100 yards from mess hall/food facilities and at least 30 yards from water supplies. Ensure that all sanitary devices are located in accordance with the latest preventative medicine guidance.

4.5.3 Certification of Water Sources by Medical Field Unit.

Before local water sources can be dispensed for cooking, cleaning, drinking, or other operations, the medical unit (bioenvironmental engineer) must certify that the water is fit for use. The environmental function may be able to provide assistance on past operations in the area that may have contaminated the water system, or recommend well placement for water sources. Water should not be ingested until the medical unit has characterized the water as potable. The medical field unit may also assist with sampling of discharges into the wastewater treatment system.

4.6 SPILL PREVENTION AND RESPONSE.

Spill response equipment is not in USAF deployment kits at this time. Therefore, it is important to contact the civil engineer unit prior to deploying to determine the availability of spill response equipment at the deployed site, and to order any needed spill equipment as soon as possible after arrival. Although a fire response capability will be present, it is advisable to obtain a basic spill response kit to prepare for spills of the materials used in your daily operations. At a minimum, fire extinguishers and absorbent material should be on hand for spill response. Determine quantities needed prior to

deployment based on the size of the deploying force and the amount of hazardous materials on hand.

4.6.1 **Response Procedures.**

A spill can occur during any phase of an exercise or contingency operation. In case of a spill:

- Contact the fire department and describe the spill contents and its size and location.
- Contact bioenvironmental engineering so they can assess potential health hazards.
- Contain the spill when possible, and evacuate the area if necessary.
- Contact the unit environmental coordinator or theater component to answer questions on proper storage and disposal of hazardous material and hazardous waste.
- Use proper procedures when handling hazardous materials to reduce the possibility of additional spills.

Use the list below to increase your spill response capabilities:

- Limit spills through the use of secondary containment.
- If possible, obtain/order the following spill response items:
 - 55-gallon open-head drums (2)
 - Shovels
 - Brooms
 - Oil dry (50 lb.)
 - Soda ash (50 lb.) for acidic materials
 - Portable chemical eye washes
 - Rubber gloves
 - Boots
 - Protective eyewear
- Coordinate all spill response actions with the HAZMAT team or fire department.
- Follow established HAZMAT spill response procedures.
- Educate personnel about access to chemical eyewashes, showers, and/or fire extinguisher use.

- Maintain an inventory of all hazardous materials within the unit.
- Ensure that pollutants are not intentionally discharged into the storm drains, water sources, or onto open ground.

4.7 AIR POLLUTION.

There are many variations between the air pollution programs in the US, and at overseas DoD and non-DoD installations. US and state air laws are very stringent compared to those overseas. In the US, it is likely that permits will be required for all stationary sources of air pollution during exercise and deployment situations. Some of these sources can include generators, open burning of solid waste, and fueling equipment. It is imperative that the deploying unit(s) coordinates with the environmental function of the installation supporting the deployment to determine whether permitting or other air pollution requirements apply.

Overseas, the programs are generally less stringent. Again, coordinate with the environmental function, if deploying to a DoD installation or the civil engineer unit or theater component.

4.8 NATURAL AND CULTURAL RESOURCES.

Soil, water, plants and wildlife, and cultural resources, including historic and prehistoric properties need to be managed wisely during contingency operations. Consider how a spill of hazardous material can percolate through the soil and impact the groundwater that you are drinking. Consider how deforestation and removal of vegetation can lead to erosion of terrain and supply channels, increased possibility of mudslides, increased exposure to enemy forces, or possible claims from the host nation related to destruction of the original area. In contingency situations, modifications to natural and cultural resources may be required, but it is important to review all the options for locating the deploying force and consider ways to minimize damage to the surrounding area. It may lead to a less arduous deployment that is better capable of protecting troops. Predeployment planning is especially important to minimize damage to natural and cultural resources. In many areas, certain cultural and natural resources are held in extremely

high regard as national symbols. Inadvertent or careless damage to those resources by our forces can, in time of peace, jeopardize future training opportunities, and, in time of conflict, make pacification efforts more difficult.

4.9 POLLUTION PREVENTION AND CONSERVATION.

The Air Force pollution prevention (P2) goal is preventing future pollution by conserving resources and reducing the use of hazardous materials and releases of pollutants into the environment to as near zero as feasible. This section addresses the priorities for implementing pollution prevention and conservation into contingency activities.

4.9.1 Planning and the Hierarchy.

Every installation has a Pollution Prevention (P2) Management Plan. Many of the strategies in the installation's P2 Management Plan may be applied during contingency operations. Reusing and recycling resources can prolong sustainment and save valuable resources.

There are four basic strategies for reducing pollution. These strategies, in order from most to least preferred, are:

- Source reduction - Reduce or eliminate dependence on hazardous materials and reduce waste streams. This will be difficult to achieve during contingency operations.
- Recycling - Reuse generated waste and recycle material whenever possible. This is an excellent way to conserve resources and prolong sustainment.
- Treatment - Employ treatment to render hazardous waste non-hazardous. This will be difficult to achieve during contingency operations.
- Disposal - Consider waste disposal a last resort.

4.9.2 Recycling and Conservation of Resources.

Recycling and reuse options are not mandated, but can reduce the amounts of waste that is generated during a contingency operation. All

recommendations should be considered as they apply to the situation in which you deploy or exercise. For instance, it may be worth recycling aluminum cans at an exercise in the US. At an overseas deployment, however, your only opportunity for recycling may be to use drained oil as a heat burning source, or reuse spent fuel in certain generators. In any operation, consider the activities listed in each step of your contingency operation. Recycling is not only environmentally beneficial, it also can assist a savvy unit in conserving valuable resources during sustainment.

4.9.3 Energy Conservation.

Energy is a vital resource in contingency operations. Awareness and maintenance are valuable tools to maximize energy efficiency within the unit. Energy conservation can reduce dependence on oil and fuel, and reduce pollutant emissions. Utilize the conservation options identified in the following chapters to reduce unnecessary use of your valuable contingency energy resources.

4.10 PESTICIDE MANAGEMENT.

Pesticides are intentionally dispersed into the environment and are designed to kill living organisms. Insecticides, rodenticides, herbicides, and repellents used during training and contingency operations can affect military personnel through direct contact, water, air, and food. Many pesticides are nerve agents which may predispose military personnel to chemical warfare agents, set off chemical alarms, or adversely affect personnel with chemical sensitivity. Proper integrated pesticide management (IPM) significantly reduces the risk of injury and helps protect water, wildlife, and other natural resources.

4.11 AIR AND SURFACE NOISE.

There are many difference sources of noise that must be considered when dealing with deployments. Those sources include motor vehicles, combat vehicles, artillery, bombs, and aircraft.

Although all noise sources must be considered, aircraft flyover noise is the area of highest concern due to its impact in the vicinity of and away from the installation. Potential noise impacts may occur anywhere aircraft training occurs, including Military Operations Areas, Military Training Routes, and Ranges/Restricted Areas. Further, the occurrence of noise sensitive receptors beneath and in the vicinity of the training airspace should be noted and considered when and where training is conducted. Noise is often a primary issue for the public and special-use land management areas.

For areas in the vicinity of the installation, environmental noise effects are managed under the auspices of the Air Installation Compatible Use Zone (AICUZ) (AFI 32-7063). Noise effects on airspace and ranges are managed under Air Force Airspace Management (AFI 13-201). All noise sources that will be generated during an exercise or deployment must be coordinated with the environmental function and analyzed under the Environmental Impact Analysis Process (AFI 32-7061). At overseas DoD installations, noise is managed under similar programs; check before deploying to see if there are additional restrictions by the host nation.



5.0 RISK MANAGEMENT DURING CONTINGENCY OPERATIONS IN THE UNITED STATES

The key to environmental risk management is analyzing the environmental impacts created during contingency operations. Personnel must integrate risk analysis into the overall planning of the contingency operation for successful environmental protection. This chapter addresses:

- Environmental risk assessment techniques.
- Practices, that when implemented, reduce or eliminate risks to human health or the environment during the contingency operations.
- Levels of environmental compliance expected at various stages of a contingency operation.

5.1 CONTINGENCY OPERATIONS.

Our objective is full compliance with applicable environmental laws and regulations during exercises and contingency operations within the US.

Levels of environmental compliance vary within each of the four phases of a deployment, as described in table 5.1. Factors affecting environmental compliance include length of deployment, time restraints, location of operation, and the purpose of the operation. Each phase must be thoroughly planned and executed to minimize the risks to human health and the environment. During all phases and situations of deployment, consult with the applicable civil engineer unit for guidance on environmental compliance.

Table 5.1. Contingency Compliance.

PHASE	LEVEL OF COMPLIANCE
Predeployment	The predeployment phase ensures that the deployment proceeds smoothly through planning and training. Planning environmental strategies prior to deployment ensures greater compliance during all phases of deployment. Increase the emphasis on environmental planning and preparedness during this phase to achieve the highest level of compliance achievable under the circumstances.
Beddown	The beddown phase usually has the greatest impact on the environment. Typically, compliance during beddown is lower than during other phases, particularly during an armed conflict deployment. This is where planning for compliance has the greatest benefit. Institute proper environmental procedures immediately to minimize noncompliance.
Sustainment	Monitor environmental compliance steadily during sustainment. As time becomes available, order additional equipment and make facility and operational modifications to improve compliance.
Redeployment	Environmental compliance must be a high priority during this phase as the area of operation is returned to its predeployment state.

This section addresses contingency operations on US DoD installations within the US and its territories and possessions. These operations impose the most stringent environmental requirements on the unit. Federal, state, local and USAF requirements are all applicable. In the US, its territories and

possessions, an environmental impact analysis (EIA) is required by law. Once an initial EIA has been completed for a location, one is not required for each subsequent deployment. Furthermore, if the host installation has conducted an EIA for contingency operations on its property, an additional EIA is not required. AFI 32-7061, *Environmental Impact Analysis Process (EIAP)*, and annex B provide further information on the EIAP. In addition, you may be required to obtain permits, variances, or waivers from regulatory agencies for pollutant releases to the air, land, and water, noise emissions, and for actions that impact cultural resources, wetlands and protected species before deployments or exercises can occur. Also, identify your hazardous waste disposal agent, such as DRMO or a local contractor. All local contractors must be approved by the environmental function before they can be used.

Fortunately, information on many areas of environmental concern (i.e., cultural and natural resources and wetlands, etc.) is already documented. The environmental function, on the installation to which you are deploying, will be knowledgeable about Federal, state, local, and USAF guidelines for environmental compliance. They are the best available information source and can assist deploying or exercising units with proper compliance procedures. Contact your base environmental flight first for information. In the highly unlikely event that a US deployment is threatened with armed conflict, the EIAP is not required.

Sections 5.2-5.5 discuss the environmental issues involved in the phases of deployment (i.e., predeployment, initial beddown, sustainment, and redeployment). Following these sections, table 5.2 illustrates fundamental steps that can be taken during a contingency operation in the US.

5.2 PREDEPLOYMENT.

Stress the importance of environmental planning to ensure compliance during exercises and contingency operations. Knowledge of environmental laws and regulations prior to deployment is essential. Exercise or contingency planners must initiate the environmental impact analysis process and prepare

a contingency specific environmental plan during predeployment. These documents and other relevant environmental issues which will be performed during predeployment are discussed below.

5.2.1 **Environmental Impact Analysis Process.**

The EIAP is required by law to document the impacts (if any) on the environment resulting from a particular action. The exercise or contingency planner is responsible for the EIAP for all deployments. At US DoD Installations, the planner should request assistance from the civil engineer unit in completing an AF Form 813, *Request for Preliminary Environmental Impact Analysis*, when the proposed deployment is first conceived. Refer to annex B for additional information on the EIAP.

5.2.2 **Environmental Plan.**

Develop and comply with the Environmental Plan as referenced in JCS Publication 4-04 and AFI 32-7006. This plan, also called the exercise or contingency specific environmental plan, shall be included as an appendix or annex to the OPLAN under which units deploy. The Environmental Plan must specify environmental responsibilities and policies on the issues numbered below as well as other relevant environmental areas.

- Policies and responsibilities to protect and preserve the environment.
- Certification of local water sources by appropriate medical field units.
- Solid and liquid waste management.
 - ◆ Open dumping.
 - ◆ Open burning.
 - ◆ Disposal of gray water.
 - ◆ Disposal of pesticides.
 - ◆ Disposal of human wastes.
 - ◆ Disposal of hazardous waste.
- Hazardous materials management, including the potential use of pesticides.
- Flora and fauna protection.
- Archeological and historical preservation.
- Spill response (including responsibilities, capabilities, and equipment).

For deployments in the US, its territories and possessions, the environmental plan should be detailed enough so that the deploying forces have enough information and guidance to achieve full compliance with Federal, state, and local environmental laws and regulations.

5.2.3 Environmental Awareness Training.

Promote environmental stewardship during exercises and deployment actions by implementing or continuing environmental awareness training. Continue HAZCOM and hazardous waste management training as needed. Make environmental information available to USAF personnel during an exercise or deployment situation. Brief USAF personnel on the environmental areas of concern for the particular training area.

5.2.4 Environmental Risk Assessment Matrices.

Use of environmental risk assessment matrices is an effective method of ensuring all areas of environmental concern are addressed. The matrices can be used to identify planned activities that may damage the environment, make adjustments to the planned actions and minimize adverse affects on the environment without impairing the mission. The exercise or contingency planner, the unit leader, or the designated environmental coordinator can complete the matrices. The contingency planner, whose perspective is a broad overview of activities of the entire deploying force, can use the matrices to assess the environmental impacts of those activities. Unit personnel can use the matrices to assess the environmental impacts of routine and non-routine unit activities. (See chapter 8 for an illustration of the matrices and their usage.)

5.2.5 Environmental Issues.

Information must be gathered concerning US environmental laws and regulations in the deployment region during every contingency operation. The types of information listed below must be gathered to complete the EIAP and contingency specific environmental plan previously discussed. This information will also guide personnel in understanding their compliance requirements. Within the US, gather information from the environmental

function. Check first with the host installation environmental office since this office will be the most knowledgeable of permitting requirements affecting landfills, water use, air pollution, etc. The bullet statements in the subsequent sections, although not all-inclusive, provide information that must be considered during contingency operations. Any of these tasks not achievable during predeployment due to the circumstances of the deployment should be performed during the next deployment phase--beddown.

5.2.5.1 **Hazardous Waste.**

- Identify potential waste streams.
- Identify storage locations and applicable storage volume or time limitations. Work with environmental flight to establish appropriate procedures that allow waste accumulation and storage without a permit.
- Identify available waste management and disposal alternatives; i.e. is DRMO available, will the installation supporting the deployment manage the wastes, or is a local disposal company required?
- Understand applicable marking and labeling requirements.
- Determine waste minimization/pollution prevention opportunities, including proper procedures for waste segregation, material substitution, and recycling and reuse options.
- Ensure that the hazardous waste manager has had hazardous waste management training.

5.2.5.2 **Hazardous Material.**

- Obtain MSDSs for every chemical product used within your unit.
- Understand storage and disposal requirements.
- Identify whether prohibited substances are used by the unit and report to environmental coordinator for the deploying force.
- Ensure unit environmental coordinator has appropriate hazardous material/hazardous waste training.
- Plan for minimization of use of hazardous materials, if possible.
- Ensure that all personnel have received HAZCOM training before handling hazardous materials.

- Identify a single hazardous materials point of contact for your unit to coordinate with the civil engineer unit and logistics (supply).
- Estimate what your hazardous materials requirements may be during the operation.
- Obtain what is required to complete your mission with a contingency built in for emergency, but do not hoard material that will not be used.
- Establish hazardous materials spill response procedures.
- Use the hazardous materials pharmacy concept to the extent practical.

5.2.5.3 Solid Waste.

- Identify whether permits are required for landfills or burning, and other disposal requirements.
- Determine if certain substances are prohibited from landfilling, incineration, or open burning.
- Identify recycling options.
- Take pictures of the solid waste disposal area before the deployment, if possible, as legal documentation of the proper procedures taken to dispose of waste. These pictures are valuable tools when a landowner wrongly accuses the Air Force of damaging land utilized for the deployment.
- Contact the civil engineer unit to determine whether a solid waste contract is in place.
- If no solid waste contract is in place, consider the feasibility of creating a landfill.
- Identify procedures within the unit for solid waste collection and hauling.
- Obtain approval for landfill or burn area siting from environmental function. In many cases, approval is also required from the installation. A permit, variance, or waiver from state regulatory agencies may be required for landfill or open burning operations on US installations.

5.2.5.4 Non-Hazardous Liquid Waste and Water Resources.

- Ensure that gray water disposal source is located downstream of all water sources and water wells, including civilian water sources and water wells.
- Ensure that all latrines are located at least 100 yards from mess halls and 30 yards from water sources.
- Ensure that all latrines are installed in accordance with the latest preventative medicine guidance.
- Determine whether permits are required for wastewater discharges, disposal of human waste, or gray water, or well installation.
- Identify prohibited effluents and regulated effluent levels to ensure compliance with laws, regulation, and policy, and ensure these requirements are met by wastewater treatment system.
- Determine whether activities will result in existing surface water contamination. Ensure contaminated surface water is not capable of entering wastewater system, as it can impact integrity of treatment efforts.
- Ensure construction and site location of wastewater system, and non-hazardous liquid waste management facilities are approved by civil engineer.
- Identify discharge procedures and chemical treatment requirements, if applicable
- Identify and map all well specifications and locations.
- Ensure bioenvironmental engineer identifies maximum contaminant levels, turbidity requirements, testing, and treatment requirements for the unit.
- Consider existing sources of groundwater pollution to assist in well siting.

5.2.5.5 Spill Prevention and Response.

Identify your spill response capabilities, including proximity to fire department or response team, and available equipment.

5.2.5.6 Air Pollution.

- Identify the types of vehicles and equipment that will be required, and determine whether permits will be required, or existing permits affected.
- Determine the air quality attainment status of the region. Many regions are more restrictive than others.
- Identify prohibited air pollutants. If identified, determine what alternatives are available.
- Identify whether air treatment equipment may be required and whether air monitoring is a requirement.

5.2.5.7 Natural and Cultural Resources.

- Review documented historical or archeological sites in, or around, the deployment area.
- Determine whether sacred sites or cemeteries are present within the deployment area.
- Determine whether prime forest lands are present within the deployment area.
- Consult US Fish and Wildlife Service to determine whether endangered or threatened species exist in, or around, the deployment area.
- Determine the presence of sensitive habitats.
- Consult Corps of Engineers or professionally-prepared delineation maps to determine the presence of wetlands.
- Determine the presence of runoff potential.
- Determine the presence of coastal zones.
- Determine the presence of flood plains.

5.2.5.8 Pollution Prevention and Conservation.

- Order only as much hazardous material as needed, eliminating excess hazardous materials which, if discarded, could result in significant costs for disposing as hazardous waste. Efficient ordering and distribution of hazardous materials should occur as close to stateside installation operations as possible.
- Assess the feasibility of reusing fuel and other materials. Examples include: recycling used oil drained from equipment and generators;

recycling used antifreeze; and reusing contaminated fuel as a heat source. Recycling is not only environmentally beneficial, it also conserves valuable resources.

- Coordinate with the unit environmental coordinator to determine methodology for recycling, and what materials can be reused.
- Incorporate the recycling/reuse ideas into the contingency's standard operating procedures.
- Plan for the use of seawater, brackish water, or gray water for concrete, soil compaction, soil cement, and dust control.
- Plan for the use of alternatives for disposing of water that may have some useful purpose. For example, water that is too hot to be palatable can be used for equipment cleaning or laundry.
- Establish energy conservation procedures and brief deploying personnel, as appropriate.

5.2.5.9 **Pesticides.**

- Obtain copy of Technical Information Memorandum 24 and specific host country information from the Armed Force Pest Management Board at DSN 295-7479 or commercial (301) 295-7479.
- Obtain copies of labels and MSDSs for all pesticides and repellents that will be used within the unit.
- Ensure proper personal protective equipment is available (including respirator cartridges).
- Spill kits should be available.
- Provide unit level training to all personnel to ensure individuals understand exposure or setting off chemical alarms.
- Train personnel on proper use of insect repellents.
- Determine if pesticides banned by EPA are commonly used on food or for disease vector control.
- Identify wildlife or wetlands that may be adversely affected by pesticide use.
- Assess environmental impacts of potential aerial application of pesticides.

5.2.5.10 Air and Surface Noise.

- Determine maximum decibel levels.
- Identify number and types of aircraft to be used.
- Identify types and number of equipment to be used.
- Identify operations or sorties to be flown.
- Identify time and intensity of noise duration.
- Identify hours of operation.

5.3 INITIAL BEDDOWN.

During beddown, awareness of environmental issues and adherence to the environmental plan are essential while performing the initial duties of making utility systems and support facilities operational. The rule of thumb during this environmentally challenging stage is to minimize impacts to human health and the environment without impairing the mission. During wartime operations, comply with regulations to the maximum extent possible without impairing the mission.

5.3.1 Work with Environmental Flight Responsible for Deployed Location.

The environmental flight is the central point of contact for environmental issues when deployed. Consult the environmental flight when questions concerning environmental regulations cannot be answered by the unit environmental point of contact. The environmental flight is also a source of information on specific environmental issues (weather patterns, important geographic features, etc.) for the particular deployment location. The environmental flight must also approve all methods of hazardous and solid waste storage and disposal. If there is not an environmental flight, then work with deployed environmental function.

5.3.2 Revise/Update Environmental Plan.

During initial beddown, note special obstacles and difficulties encountered during the deployment which would make the current plan inefficient or unworkable. Request approval to deviate from the plan, if necessary. Forward all proposed changes to the environmental plan through the chain-

of-command to the environmental function during the sustainment phase of the operation or when the deployment is completed.. Refer to the environmental annex to the OPLAN.

5.3.3 **Monitor Environmental Issues.**

Completing the mission is primary; however, environmental stewardship can complement and enhance the mission. It is absolutely essential that beddown activities be monitored for environmental compliance, especially within the US, its territories and possessions. Unless there is a declared war which may affect applicability of environmental laws, contingency, operations on US soil will have to comply with existing environmental regulations. Beddown is a critical time where spills, unauthorized releases, and other potential detrimental environmental actions can take place due to the excitement and urgency of the actions. Therefore, it is critical that the environmental representatives monitor beddown activities and provide environmental awareness instruction and consultation.

5.3.3.1 **Hazardous Waste.**

- Identify hazardous waste based on user knowledge of the process and material.
- Establish an initial (satellite) accumulation point within the unit if hazardous waste is generated. Within the US, this point allows for storage of up to 55 gallons of hazardous waste or 1 quart of acutely hazardous waste. Consult environmental flight or environmental POC for deploying force to determine hazardous waste storage procedures.
- Locate waste facilities downstream and downwind from all water sources and barracks.
- Mark and segregate all wastes.

5.3.3.2 **Hazardous Materials.**

- When a material is issued, ask supply to provide a copy of the MSDS, so it can be reviewed by personnel using the material.
- Ensure that all hazardous materials are marked, so that users can obtain and utilize the correct materials.

- Store hazardous materials in clearly labeled containers that are sealed, when not in use.
- Ensure that fire protection and bioenvironmental engineering services have identified incompatible materials and recommended safe storage requirements.
- Use non-hazardous substitutes to the maximum extent possible.
- Ensure that adequate protective equipment is available.

5.3.3.3 Solid Waste.

- Obtain necessary equipment for creating and managing the landfill or burn area, such as a backhoe and/or front end loader.
- Install landfills or burn areas at least 30 yards downstream and downwind of the camp and all water sources and outside of areas where leaching or seepage may carry waste or waste constituents to water-bearing strata or wells.
- Locate landfills or burn areas on stable soil and not on exposed rock strata.
- Construct landfill or burn area trenches perpendicular to the prevailing winds, if possible. Trenches should be deep enough to contain the anticipated long-term volume.

5.3.3.4 Non-Hazardous Liquid Wastes and Water Resources.

- Locate activities requiring large amounts of potable water near tank farms or terminals to minimize transportation requirements and losses during handling.
- Locate facilities using non-potable water, such as fire fighting equipment and vehicles, near a suitable generator of wastewater.
- Limit the use of showers by turning them off when not in use, and/or turning boilers off when not in use.
- Eliminate water that has pooled due to poor drainage or in bermed areas. Standing or stagnant water may breed pests.
- Reuse laundry rinse water as laundry wash water.
- Protect potable water from all sources of contamination (including sand/dust).

- Prohibit water thievery from storage containers and pipelines and the indiscriminate use of expedient showers.

5.3.3.5 **Spill Prevention and Response.**

- Contact the fire or emergency response unit, if a spill occurs.
- Attempt to procure 55-gallon drums, shovels, and kitty litter for use to respond to spills.
- Prevent all spills from entering surface water sources, and porous soil that is located near water-bearing strata.
- Contact the environmental flight of the installation supporting the deployment to inform them of the quantity and type of material that was spilled, so they may determine whether any reports are required to regulatory officials.

5.3.3.6 **Air Pollution.**

Coordinate with environmental flight of installation supporting the deployment to ensure that all air emissions sources used for the deployment are approved, or waivers or variances have been granted.

5.3.3.7 **Natural and Cultural Resources.**

- Minimize removal of vegetation and soil, as applicable to situation during activities.
- If cultural resources or endangered species are located within the deployment area, as identified by environmental flight of installation supporting deployment, ensure that the areas are left outside of primary land use areas and are not damaged.
- Minimize operations in the vicinity of wetlands or on erodable slopes.

5.3.3.8 **Pollution Prevention and Conservation.**

- Identify, order, and install equipment needed to implement recycling/reuse procedures, if duration of deployment warrants.
- Set up recycling areas with appropriate equipment.
- Turn off lights when leaving a facility/tent and turn off non-essential computers when not in use.

- Ensure that condenser coils on air conditioning equipment remain clean.
- Clean steam traps and fix stuck dampers.
- Check, adjust, or replace fan belts on equipment.
- Keep bearings and other friction points lubricated.
- Ensure that berms are constructed for all fuel bladders.
- Protect cables that cross roads from vehicles.
- Place all generators in backup mode, once power plant electrical service is available.
- Use non-hazardous substitutes to the maximum extent possible.
- Limit the use of showers by turning them off when not in use, and/or turning boilers off when not in use.
- Reuse laundry rinse water as laundry wash water.

5.3.3.9 Pesticides.

- Non-chemical methods of insect, weed, and rodent control, including increased sanitation should be attempted before pesticides are used.
- All personnel should be notified before pesticide applications occur to allow clothing, food, and other sensitive items to be covered.
- Use repellents for personnel protection.
- Maintain a record of all pesticide applications.
- Pesticides should be stored to prevent accidental contamination of food or water.
- Each pesticide should be clearly labeled and sealed when not in use.
- Pesticide containers should be triple rinsed, punctured, and disposed of in accordance with label directions.
- Contract pesticide application and non-standard pesticides must be approved by the area entomologist.

5.3.3.10 Air and Surface Noise.

- Ensure that waivers, variances for noise pollution sources have been obtained, if required.
- If maximum decibel levels, number of aircraft to be used, sorties to be flown, hours of operation, and types and number of equipment have been

identified, ensure that they are not exceeded, through notification of commanding officers and personnel operating equipment.

5.4 SUSTAINMENT.

Now that mission critical systems are all in place, the focus can turn to resupplying and preparing for a long term deployment. This is an excellent opportunity to increase the level of environmental stewardship.

5.4.1 Work with Environmental Function.

Consult the deployed environmental function and the environmental flight responsible for the deployed location about environmental problems encountered during the beddown phase and determine the most efficient way to solve these problems for sustainment. Discuss any additional personnel and equipment requirements.

5.4.2 Monitor Environmental Issues and Utilize Risk Assessment Matrices.

Continue to monitor environmental compliance issues to ensure the level of compliance and stewardship continues to increase. Identify and correct violations of environmental requirements. An important tool in monitoring environmental compliance is the use of the environmental risk assessment matrices found in chapter 8. The matrices should be updated to account for special obstacles and difficulties encountered during the beddown phase.

5.4.2.1 Hazardous Waste.

- Identify hazardous waste based bioenvironmental engineer on sampling and analysis results or user knowledge of the process and material.
- Provide secondary containment or berms for all waste containers.
- Obtain spill response equipment (e.g., absorbents, speedi-dry, overpacks for drums).
- Contact environmental function, if unsure of proper handling procedures. **Never bury or dump your hazardous waste.**
- Keep records of materials placed in drums.

- Turn in full drums to the hazardous waste storage area. Contact environmental function, if unsure of procedures.
- Mark and segregate all hazardous wastes. The deployed environmental function or your unit environmental coordinator should have hazardous waste markings. Use these markings to identify the hazardous contents of your waste. If markings are unavailable, mark containers in the most appropriate manner feasible.
- Keep drums closed, when not in use.
- If contingency activity will exceed 90 days, establish hazardous waste disposal activity and coordinate with base environmental flight.

5.4.2.2 Hazardous Materials.

- When a material is issued, ask supply to provide a copy of the MSDS, so it can be reviewed by personnel using the material.
- Ensure that all hazardous materials are marked, so that users can obtain and utilize the correct materials.
- Store hazardous materials in clearly labeled containers that are sealed, when not in use.
- Ensure that fire protection and bioenvironmental engineering services have identified incompatible materials and recommended safe storage requirements.
- Redeployment becomes more costly and time consuming with the amount of hazardous materials needing disposal. Moving hazardous materials or expired shelf-life material during redeployment is a logistical challenge and requires coordination between different flights and installations. Avoid this situation by controlling/reducing the amount of hazardous materials ordered.
- In case of hazardous materials spill, contact spill response team or fire department.
- Be conscious of the waste you are generating when applying or using hazardous materials, as the waste material may need to be properly managed as hazardous waste.
- Ensure that MSDSs are on file for all hazardous materials within your unit and maintain up-to-date inventory records.

5.4.2.3 Solid Waste.

- Consider recycling/reuse of materials or other methods to reduce the volume of materials that are to be disposed of.
- Ensure the landfill receives a daily cover of at least 6" and a final cover of at least 24".
- Establish procedures to discourage disposal of hazardous materials and hazardous waste as solid waste.
- Burn waste only as a last resort. Ensure that all burning takes place downwind and at a significant distance away from the camp.
- Make sure equipment is available to properly operate the landfill or burn area.

5.4.2.4 Non-Hazardous Liquid Wastes and Water Resources.

- Reuse laundry rinse water as laundry wash water.
- Protect potable water from all sources of contamination (including sand/dust).
- Prohibit water thievery from storage containers and pipelines and the indiscriminate use of expedient showers.
- Eliminate water that has pooled due to poor drainage or in bermed areas. Standing or stagnant water may breed pests.

5.4.2.5 Spill Prevention and Response.

- Obtain/order spill response equipment through supply channels. Necessity of equipment is dependent upon the function and the estimated duration of the deployment.
- Review spill response procedures with troops. In case of fire or spill: alert individuals in area of the spill; isolate the area; notify the fire department/emergency response team; respond to the spill, if it is within your capability.
- Periodically check equipment to ensure it is in good working condition.

5.4.2.6 Air Pollution.

- Minimize hazardous air emissions that are posing an inhalation risk to the troops. Work with bioenvironmental engineering and the civil engineer function to identify such risks, and methods for risk reduction.
- If hazardous air pollutants are identified, ensure that their emissions do not exceed levels specified in permits, variances or waivers. Coordinate with environmental function and write maximum source standards and emission levels into OPLAN.

5.4.2.7 Natural and Cultural Resources.

In consultation with appropriate regulator, identify ways to minimize damage to surrounding natural and cultural resources, and execute actions, as applicable to situation.

5.4.2.8 Pollution Prevention and Conservation.

- Evaluate whether additional recycling equipment can be used (i.e., antifreeze recyclers, freon recyclers, aerosol can crushers) and determine what is available, as applicable to situation.
- Order and install equipment needed for recycling while time and resources are available.
- Train personnel on recycling/reuse procedures.
- Place appropriate labels on recycled material that will be returned to a DoD or US installation and maintain documentation listing the materials and their intended uses.
- Turn off lights when leaving a facility/tent and turn off non-essential computers, when not in use.
- Ensure that condenser coils on air conditioning equipment remain clean.
- Clean steam traps and fix stuck dampers.
- Check, adjust, or replace fan belts on equipment.
- Keep bearings and other friction points lubricated.
- Ensure that berms are constructed for all fuel bladders.
- Protect cables that cross roads from vehicles.
- If applicable, place all generators in backup mode once power plant electrical service is available.

- Reuse laundry rinse water as laundry wash water.

5.4.2.9 **Pesticides.**

- Use repellents for personnel protection.
- Non-chemical methods of insect, weed and rodent control, including increased sanitation should be attempted before pesticides are used.
- All personnel should be notified before pesticide applications occur to allow clothing, food, and other sensitive items to be covered.
- Maintain a record of all pesticide applications.
- Pesticides should be stored to prevent accidental contamination of food or water.
- Each pesticide should be clearly labeled and sealed when not in use.
- Pesticide containers should be triple rinsed, punctured, and disposed of in accordance with label directions.
- Contract pesticide application and non-standard pesticides must be approved by the area entomologist.

5.4.2.10 **Air and Surface Noise.**

Ensure that any increase in the number of sorties to be flown, number of equipment to be used, time and intensity of noise duration, and maximum decibel levels, or change in the hours of operation are authorized in accordance with local noise regulations and approved by the environmental flight supporting the deployment.

5.4.3 **Update Environmental Plan as Needed.**

The Environmental Plan should be updated as needed throughout the sustainment phase. Be sure to update the Environmental Plan when mission requirements change.

5.4.4 **Continue Awareness Training.**

Administer refresher environmental awareness training to all units involved in the contingency operations units. Establish SOPs for hazardous and solid waste transport and storage.

5.5 REDEPLOYMENT.

At the completion of the contingency operation, the redeployment phase commences. The Air Force strives to restore the contingency operation to its predeployment state. After this phase the area will be again returned to the installation.

5.5.1 Work with Environmental Function.

Coordination with the deployed environmental function and the environmental function responsible for the deployed location is important in this final phase of the contingency operation. The environmental function will designate the proper procedures for clean-up and returning the area to its predeployment state.

5.5.2 Hazardous Waste Storage and Disposal.

Once the contingency operation is complete, the hazardous waste must be prepared for transport, storage and disposal. Work closely with the host environmental flight on these tasks. Proper packaging/shipping containers (DoT approved), labels, MSDSs, and disposal instructions should be obtained prior to deployment. The EPA hazardous waste marking (shown in figure 4.1) is recommended and is available from the civil engineering office. If markings are not available, use a stencil or marking pen to mark containers with the required information. Containers of waste must also be marked with appropriate DoT hazardous material labels, such as the example shown in figure 4.2. Prior to shipment, a hazardous waste manifest must be prepared and signed. The civil engineer unit of the installation receiving the deployment, or DRMO can assist with preparation of the manifest, and the marking and labeling requirements. They can also ensure that the waste is transported to a permitted hazardous waste treatment, storage, or disposal unit, as required by RCRA.

5.5.2.1 Using the Defense Reutilization and Marketing Organization as Disposal Agent.

DRMO has the capability to dispose of hazardous waste from contingency operations. The viability of this option is driven by the cost of disposal,

proximity of the nearest DRMO, and restrictions of transport of hazardous waste. DRMO can assist with contracting for local disposal and provide regulatory compliance recommendations.

5.5.2.2 Disposal as a Site Responsibility.

The commander of the contingency operation must ensure that the hazardous waste generated by the operation is disposed of in a legal, efficient, and environmentally sound manner.

Arrangements must be made, with as much lead time as possible, regarding the method of transport for the hazardous waste. Vehicles, ships or aircraft must meet DoT environmental regulations for transport of hazardous waste and transporters must have an EPA Identification Number. In addition, a written confirmation must be obtained stating that the receiving facility agrees to take the waste. DRMO can generally serve as the disposal agent or recommend a local disposal contractor. If DRMO is not available, coordinate these efforts with the environmental function responsible for the deployed location or the deployed environmental function.

5.5.3 Hazardous Material Labeling and Packaging.

Hazardous material being transported from the contingency must be properly packaged and labeled to ensure full compliance. Hazardous materials should not be confused with hazardous wastes. Hazardous wastes are destined for disposal and are not being considered for reuse; whereas, unused hazardous materials, such as fuels and paints can be reused in a process. Both hazardous materials and hazardous wastes require DoT hazard labels, but only the hazardous waste requires the EPA hazardous waste marking shown in figure 4.1.

Ensure containers of hazardous material are properly packaged. Containers must be closed, secured, palletized and packaged according to Federal, state, local, and USAF regulations. Consult environmental function or DRMO for additional information.

Ensure packages containing hazardous material are properly labeled. The labeling method used must comply with the DoT regulations. DoT labels identifying hazard class are required in the United States and should be available from the civil engineer unit. In some cases, vehicles containing certain quantities or types of hazardous materials will require DoT placards. Consult environmental function for additional information.

5.5.4 Abandonment/Disposal Requirements for Wastewater and Solid Waste, and Water Resources.

Coordinate with environmental function responsible for the deployed location on abandonment or disposal requirements for water resources, wastewater, and solid waste facilities. Ensure photographs are taken of the landfill, latrine, and waste storage areas. Consult applicable US and USAF regulations to ensure compliance.

5.5.4.1 Mark or Map as Necessary.

Abandoned wastewater and solid waste facilities should be marked or mapped to identify their exact location. Under no circumstances, may wastewater or solid waste be disposed of unless authorized by the environmental function responsible for deployed location

5.5.4.2 Water Resources Abandonment.

If water wells were installed, state or local regulations may require specific procedures to close and permanently abandon these wells. Consult environmental flight responsible for deployed location for more information.

5.5.5 Natural and Cultural Resources and Wetlands.

Natural and cultural resources and wetlands must be returned to their predeployment state to the highest feasible extent. Coordinate with environmental flight for more information on returning area to its predeployment state. National and cultural resources and wetlands in the United States cannot be affected without proper coordination with Environmental Regulators.

5.5.6 Additional Redeployment Responsibilities.

5.5.6.1 Hazardous Waste.

- In many locations, all waste must be turned in with the appropriate MSDS. Proper segregation and marking of hazardous waste can save significant amounts of money in sampling and disposal costs. The marking shown in figure 4.1, is required for use within the US, before and during transport of hazardous waste.
- Prior to loading hazardous waste onto cargo planes, obtain approval from environmental function and the installation receiving the waste.
- If using DRMO or local contractor for waste disposal, ensure that environmental function coordinates contract and assists with waste shipment.
- Ensure proper manifests or bills of lading have been generated and approved.
- Ensure that DoT labels are placed on containers prior to transport. Labels are colored, diamond-shaped and describe the hazards associated with the material. All labels are described and illustrated in 49 CFR part 172, subpart E.
- Ensure that placards are placed on vehicles when required. Coordinate with DRMO, or if using a local disposal service, ensure environmental function oversees disposal shipment.
- Ensure wastes are shipped to treatment, storage, and/or disposal facilities who have valid hazardous waste permits for such activities.

5.5.6.2 Hazardous Materials.

- Ensure containers are marked, sealed and secured before shipping.
- Coordinate with the civil engineer unit and logistics (supply) to determine what DoT labels are required.
- Contact the appropriate environmental flight to determine proper procedures for disposal of unused hazardous materials.
- Abandonment of hazardous material or waste can result in fines in the US for any damages that occur as a result of abandonment. Never abandon hazardous materials.

5.5.6.3 Solid Wastes.

- Take pictures of the solid waste disposal area after the deployment as legal documentation of the proper procedures taken to dispose of waste.
- Ensure that all closed landfills are marked as such when closed.

5.5.6.4 Non-Hazardous Liquid Wastes and Water Resources.

- Take photographs of latrine before leaving area.
- Mark latrine as such with a sign showing the date of closure and the words “Closed Latrine”, after covering with approximately 24” of soil.

5.5.6.5 Spill Prevention and Response.

- Drum any contaminated soil or emergency response equipment (that cannot be cleaned or reused) generated as a result of a spill.
- Mark the drum as spill contaminated material. For example a drum of soil contaminated with MEK should be marked, “MEK contaminated soil”.
- Ensure drum is taken to appropriate waste management area and arrangements are made for its disposal or transport. Coordinate these activities with waste site manager, usually the civil engineer or DRMO.

5.5.6.6 Natural and Cultural Resources.

Restore natural and cultural resources to their predeployment state to the greatest extent practicable.

5.5.6.7 Air Pollution.

During redeployment activities, minimize emissions to the greatest extent practicable, i.e. do not burn waste or trash unless a permit has been obtained by the environmental flight authorizing open burning.

5.5.6.8 Pollution Prevention and Conservation.

- Restore site to its predeployment state.
- Follow redeployment procedures.
- Make recommendations through the civil engineer unit chain-of-command for ways to increase recycling activities in future operations.

- Follow post deployment requirements and submit documentation as required by environmental flight or other responsible parties, e.g., environmental function responsible for deployed location. Example: Environmental Flight at a US installation.

5.5.6.9 Pesticides.

Follow hazardous material shipping requirements.

5.5.6.10 Air and Surface Noise.

Minimize noise pollution during redeployment activities, by redeploying in accordance with the specifications outlined in the OPLAN.

Table 5.2, Contingency Environmental Compliance, summarizes suggested actions for deployed forces to meet compliance requirements.

Table 5.2. Contingency Environmental Compliance.

Contingency Environmental Compliance		
If you're in:	And you're in the following phase:	Then to meet compliance requirements:
An exercise or contingency situation at a US DoD installation	PREDEPLOYMENT	<ul style="list-style-type: none"> • Establish a single point of contact for environmental issues for the entire deploying force.
		<ul style="list-style-type: none"> • Consult the installation's environmental function for information on environmental conditions particular to the region of operation.
		<ul style="list-style-type: none"> • Accomplish the EIAP required by NEPA (see annex B).

Table 5.2. Contingency Environmental Compliance (Cont'd).

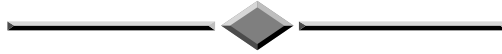
Contingency Environmental Compliance		
If you're in:	And you're in the following phase:	Then to meet compliance requirements:
		<ul style="list-style-type: none"> • Review the existing environmental plan or develop an environmental plan that addresses environmental, safety, and occupational health responsibilities and policies for inclusion in the OPLAN as an appendix or annex. Address the topics outlined in section 5.2.2.
		<ul style="list-style-type: none"> • Familiarize yourself with applicable Federal, state, local and USAF requirements
		<ul style="list-style-type: none"> • Contact your base environmental flight and MAJCOM/CEV for information as needed.
		<ul style="list-style-type: none"> • Brief the chain of command.
An exercise or contingency situation at a US DoD installation (Cont'd)	PREDEPLOYMENT (Cont'd)	<ul style="list-style-type: none"> • Consider assigning a person from each deployed unit as a unit environmental coordinator. Ensure that the designated person has received appropriate training.
	INITIAL BEDDOWN	<ul style="list-style-type: none"> • Ensure that required training such as Hazard Communication, Hazardous Waste Management is complete.
		<ul style="list-style-type: none"> • Pre-brief deploying force on environmental concerns.

Table 5.2. Contingency Environmental Compliance (Cont'd).

Contingency Environmental Compliance		
If you're in:	And you're in the following phase:	Then to meet compliance requirements:
		<ul style="list-style-type: none"> • Ensure adequate spill prevention/control/response capability exists. Solicit support from nearest DoD installation if necessary. • Work with deployed civil engineer and unit environmental coordinator. • Implement Environmental Plan, update as needed. • Report any environmental incident/accident or hazardous material spill to the fire department.
An exercise or contingency situation at a US DoD installation (Cont'd)	INITIAL BEDDOWN (Cont'd)	<ul style="list-style-type: none"> • Monitor environmental issues and continue awareness training.
	SUSTAINMENT	<ul style="list-style-type: none"> • Work with deployed civil engineer and unit environmental coordinator. • Monitor environmental issues and ensure that applicable requirements are enforced
	REDEPLOYMENT	<ul style="list-style-type: none"> • Observe correct packaging and disposal procedures and submit documentation as required by environmental function.

Contingency Environmental Compliance		
If you're in:	And you're in the following phase:	Then to meet compliance requirements:
Contingency situation with armed conflict or the threat of armed conflict	ANY OF THE PHASES	<ul style="list-style-type: none">• Make every effort to comply with environmental regulations and policies. If deployment operations do not permit compliance, use common sense and consult the environmental function for purposes of requesting an Executive Emergency exemption..





THIS PAGE IS INTENTIONALLY LEFT BLANK.



6.0 RISK MANAGEMENT DURING CONTINGENCY OPERATIONS AT OVERSEAS DOD INSTALLATIONS

The key to environmental risk management is analyzing the risk of the environmental impacts created during contingency operations. Personnel must integrate risk analysis into the overall planning of the contingency operation for successful environmental protection. This chapter addresses:

- Environmental risk assessment techniques.
- Practices that when implemented reduce or eliminate risks to human health or the environment during the contingency operations.
- Levels of environmental compliance expected at various stages of a contingency operation and at overseas DoD installations.

6.1 CONTINGENCY OPERATIONS.

Levels of environmental compliance vary within each of the four phases of a deployment, as described in table 6.1, Contingency Compliance. Factors affecting environmental compliance include length of deployment, time restraints, location of operation, and the purpose of the operation. Each phase must be thoroughly planned and executed to minimize the risks to human health and the environment. During all phases and situations of deployment consult with the applicable theater component/environmental flight for guidance on environmental stewardship challenges.

Table 6.1. Contingency Compliance.

PHASE	LEVEL OF COMPLIANCE
Predeployment	The predeployment phase ensures that the deployment proceeds smoothly through planning and training. Planning environmental strategies prior to deployment ensures greater compliance during all phases of deployment. Increase the emphasis on environmental planning and preparedness during this phase to achieve the highest level of compliance achievable under the circumstances.
Beddown	The beddown phase usually has the greatest impact on the environment. Typically, compliance during beddown is lower than during other contingency phases, particularly during an armed conflict deployment. This is where planning for compliance has the greatest benefit. Institute proper environmental procedures immediately to minimize noncompliance.
Sustainment	Monitor environmental compliance steadily during sustainment. As time becomes available, order additional equipment and make facility and operational modifications to improve compliance.
Redeployment	Environmental compliance must be a high priority during this phase as the area of operation is returned to its original state.

This section addresses contingency operations at overseas DoD installations. The required compliance efforts depend largely upon US agreements with the host nation. However, as with operations at US installations, you must be knowledgeable about environmental requirements. Host nation and USAF

requirements, and the applicable Final Governing Standards (FGS) will most likely outline the environmental rules for the deploying force. The FGS outline the environmental compliance guidelines for the installation that the force is deploying to and are a key to understanding the units' requirements for environmental compliance. They serve as useful planning tools that outline the typical environmental requirements for the installation.

Contact the environmental function of the installation that the unit is deploying to for information on environmental requirements as early in the planning process as possible. They will be familiar with the requirements for the area and can expedite development of the environmental annex to the OPLAN.

Sections 6.2-6.5 discuss the environmental issues involved in the phases of deployment (i.e., predeployment, initial beddown, sustainment, and redeployment). Following these sections, table 62 illustrates fundamental steps that can be taken for each type of contingency operation.

6.2 PREDEPLOYMENT.

Stress the importance of environmental planning to ensure compliance during exercises and contingency operations. Knowledge of environmental requirements prior to deployment is essential. Exercise or contingency planners must initiate the environmental impact analysis process and prepare a contingency specific environmental plan during predeployment. The theater command will ensure EIAP requirements are met before the exercise or deployment occurs. These documents and other relevant environmental issues which will be performed during predeployment are discussed below. The host environmental office will assist all deploying units with development of plans and advice on requirements. It is extremely important, however, to consult them as early as possible.

6.2.1 **Environmental Impact Analysis Process.**

The EIAP is required to document the impacts (if any) on the environment resulting from a particular action. The exercise or contingency planner is responsible for the EIAP for all deployments. At overseas DoD installations, analyses of the proposed action are required. If units from more than one installation are deploying to the same location, coordination of EIA efforts is recommended to avoid duplication of work. Executive Order (EO) 12114 exempts the deploying force from the EIAP when armed conflict or the threat of armed conflict is imminent. In these situations, contact the Civil Engineer as soon as possible. Annex B outlines EIAP requirements for deployments to overseas DoD installations.

6.2.2 **Environmental Plan.**

Develop and comply with the Environmental Plan as referenced in JCS Publication 4-04 and AFI 32-7006. This plan, also called the exercise or contingency specific environmental plan, shall be included as an appendix or annex to the OPLAN under which units deploy. The Environmental Plan must specify environmental responsibilities and policies on the issues numbered below as well as other relevant environmental areas.

- Policies and responsibilities to protect and preserve the environment.
- Certification of local water sources by appropriate medical field units.
- Solid and liquid waste management.
 - ◆ Open dumping.
 - ◆ Open burning.
 - ◆ Disposal of gray water.
 - ◆ Disposal of pesticides.
 - ◆ Disposal of human wastes.
 - ◆ Disposal of hazardous waste.
- Hazardous materials management, including the potential use of pesticides.
- Flora and fauna protection.
- Archeological and historical preservation.
- Spill response (including responsibilities, capabilities, and equipment).

For deployments to DoD installations in foreign countries, the environmental plan should include sufficient detail to ensure that the deploying forces have the information needed to enable full compliance with applicable environmental requirements, such as host nation agreements.

6.2.3 Environmental Awareness Training.

Promote environmental stewardship during exercises and deployment actions by implementing or continuing environmental awareness training. Continue HAZCOM and hazardous waste management training as needed. Make environmental information available to USAF personnel during an exercise or deployment situation. Brief USAF personnel on the environmental areas of concern for the particular training area.

6.2.4 Environmental Risk Assessment Matrices.

Use of environmental risk assessment matrices is an effective method of ensuring all areas of environmental concern are addressed. The matrices can be used to identify planned activities that may damage the environment, make adjustments to the planned actions and minimize adverse affects on the environment without impairing the mission. The exercise or contingency planner, the unit leader, or the designated environmental coordinator can complete the matrices. The contingency planner, whose perspective is a broad overview of activities of the entire deploying force, can use the matrices to assess the environmental impacts of those activities. Unit personnel can use the matrices to assess the environmental impacts of routine and non-routine unit activities. (See chapter 8 for an illustration of the matrices and their usage.)

6.2.5 Environmental Issues.

Information must be gathered concerning host nation agreements, FGSs, or other agreements in the deployment region during every contingency operation. The types of information listed below must be gathered to complete the EIAP and contingency specific environmental plan previously discussed. This information will also guide personnel in understanding their compliance requirements. Check first with the host installation environmental office since this office will be the most knowledgeable of permitting

requirements affecting landfills, water use, air pollution, etc. The bullet statements in the subsequent sections, although not all-inclusive, provide information that must be considered during contingency operations. Any of these tasks not achievable during predeployment due to the circumstances of the deployment should be performed during the next deployment phase-beddown.

6.2.5.1 **Hazardous Waste.**

- Identify applicability of available storage and disposal methods, labeling and marking requirements, storage locations and transportation requirements, and storage volume and time limits by coordinating with the host environmental flight.
- Identify applicability of any material reuse options.
- Identify potential waste streams.
- Ensure that the hazardous waste manager has had hazardous waste management training.
- Identify disposal agent and redeployment disposal procedures.

6.2.5.2 **Hazardous Material.**

- If possible, obtain MSDSs for every chemical product used within your unit.
- Understand storage and disposal requirements, and spill response requirements.
- Identify whether prohibited substances are used by the unit and report to environmental coordinator for the deploying force.
- Ensure unit environmental coordinator has appropriate hazardous material/hazardous waste training; it is recommended all personnel receive HAZCOM training before handling hazardous materials.
- Plan for minimization of use of hazardous materials, if possible.
- Identify a single hazardous materials point of contact for your unit to coordinate with the civil engineer unit and supply.
- Estimate what your hazardous materials requirements may be during the operation.

- Obtain what is required to complete your mission with a contingency built in for emergency, but do not hoard material that will not be used.
- Establish hazardous materials spill response procedures.
- Use the hazardous materials pharmacy concept to the extent possible.

6.2.5.3 **Solid Waste.**

- Identify whether permits are required for landfills or burning, if they are selected disposal options.
- Identify disposal requirements, i.e. waste pickup, drop off, location, trash restrictions, etc.
- If burning or incinerating trash, identify whether prohibited substances exist.
- Are there any orders to recycle? If so, what materials?
- Take pictures of the solid waste disposal area before the deployment as legal documentation of the proper procedures taken to dispose of waste. These pictures are valuable tools when a land owner or host nation wrongly accuses the Air Force of damaging land utilized for the deployment.
- Contact the theater component/DRMO to determine whether a solid waste contract is in place.
- If no solid waste contract is in place, consider the feasibility of creating a landfill.
- Obtain approval for landfill or burn area siting from theater component/DRMO. In many cases, approval is also required from the host nation or installation.

6.2.5.4 **Non-Hazardous Liquid Wastes and Water Resources.**

- Ensure that gray water disposal/discharge occurs downstream of all water sources and water wells, including civilian water sources and water wells.
- Ensure that all latrines are located at least 100 yards from mess halls and 30 yards from water sources.

- Ensure that all latrines are installed in accordance with the latest preventative medicine guidance.
- Are discharges allowed? If so, what materials and at what levels may they be discharged?
- Identify applicability of prohibited effluents and regulated effluent levels.
- Determine whether activities will contaminate existing surface water. Ensure contaminated surface water is not capable of entering wastewater system, as it can impact integrity of treatment efforts.
- Ensure construction and site location of wastewater system, and non-hazardous liquid waste management facilities are approved by installation civil engineer.
- Identify discharge procedures and chemical treatment requirements, if applicable.
- Identify and map all well specifications and locations.
- Ensure water is potable by ensuring bioenvironmental engineer identifies maximum contaminant levels, turbidity requirements, and testing and treatment requirements for the unit.
- Consider existing sources of groundwater pollution (if known) to assist in well siting.
- Determine if permits or authorizations are required for water well installation.

6.2.5.5 Spill Prevention and Response.

Identify your spill response capabilities, including proximity to fire department or response team, and available equipment.

6.2.5.6 Air Pollution.

- Identify the types of vehicles and equipment that will be required, and determine whether permits will be required, or existing permits or agreements affected.
- If applicable, identify prohibited air pollutants. If identified, determine whether alternative substances are available, or a waiver can be obtained.

- Identify whether air treatment equipment may be required and whether air monitoring is a requirement.

6.2.5.7 Natural and Cultural Resources.

- Review documented historical or archeological sites in or around the deployment area.
- Determine whether sacred sites or cemeteries are present within the deployment area.
- Determine whether prime forest lands are present within the deployment area.
- Identify whether endangered or threatened species exist in or around the deployment area.
- Determine the presence of sensitive habitats.
- Determine the presence of wetlands.
- Determine the presence of runoff potential.
- Determine the presence of coastal zones.
- Determine the presence of flood plains.

6.2.5.8 Pollution Prevention.

- Order only as much hazardous material as needed, eliminating excess hazardous materials that have become hazardous wastes, which if discarded, could result in significant costs for disposing as hazardous waste. Efficient ordering and distribution of hazardous materials should occur as close to stateside installation operations as possible.
- Assess the feasibility of reusing fuel and other materials. Examples include: recycling used oil drained from equipment and generators; recycling used antifreeze; and reusing contaminated fuel as a heat source.
- Coordinate with the unit environmental coordinator to determine methodology for recycling, and what materials can be reused.
- Incorporate the recycling/reuse ideas into the contingency's standard operating procedures.
- Plan for the use of seawater, brackish water, or gray water for concrete, soil compaction, soil cement, and dust control, as appropriate.

- Plan for the use of alternatives for disposing of water that may have some useful purpose. For example, water that is too hot to be palatable can be used for equipment cleaning and laundry.
- Establish energy conservation procedures.

6.2.5.9 Pesticides.

- Obtain copies of MSDSs for all pesticides and repellents that will be used within the unit.
- Ensure proper personal protective equipment is available (including respirator cartridges).
- Spill kits should be available.
- Provide unit level training to all personnel to ensure individuals understand exposure.
- Educate personnel on the possibility of pesticides setting off chemical alarms.
- Train personnel on proper use of insect repellents.
- Identify wildlife or wetlands that may be adversely affected by pesticide use.
- Assess environmental impacts of potential aerial application of pesticides.
- Determine if any unique pesticide laws are identified in the FGS for the host nation.

6.2.5.10 Air and Surface Noise.

- Determine whether noise requirements or agreements exist.
- If applicable, identify number and types of aircraft and equipment to be used; operations or sorties to be flown; time and intensity of noise duration; and/or hours of operation.

6.3 INITIAL BEDDOWN.

During beddown, awareness of environmental issues and adherence to the environmental plan are essential while performing the initial duties of making utility systems and support facilities operational. The rule of thumb during

this environmentally challenging stage is to minimize impacts to human health and the environment without impairing the mission. During wartime operations, comply with regulations to the maximum extent possible without impairing the mission.

6.3.1 Work with the Theater Component/Environmental Function.

The environmental function of the installation supporting the deployment is the central point of contact for environmental issues when deployed. If the deploying force is not supported by an installation, work with the theater component to identify proper environmental management requirements. Consult the environmental function/theater component when questions concerning environmental regulations cannot be answered by the unit environmental point of contact. The environmental function/theater component is also a source of information on specific environmental issues (weather patterns, important geographic features, etc.) for the particular deployment location. The environmental function/theater component or the DRMO must approve methods of hazardous and solid waste storage and disposal.

6.3.2 Revise/Update Environmental Plan.

During initial beddown, note special obstacles and difficulties encountered during the deployment which would make the current plan inefficient or unworkable. Request approval to deviate from the plan if necessary. Forward all proposed changes to the environmental plan through the chain-of-command to the theater component during the sustainment phase of the operation or when the deployment is completed. (Refer to the environmental annex to the OPLAN.)

6.3.3 Monitor Environmental Issues.

Completing the mission is paramount. However, environmental stewardship can complement and enhance the mission. It is absolutely essential that beddown activities be monitored for environmental compliance. Unless there is a declared war which may affect applicability of environmental laws, contingency operations will have to comply with existing environmental regulations and requirements in host nation agreements, FGS, treaties, or

OEBGD. Beddown is a critical time where spills, unauthorized releases, and other potential detrimental environmental actions can take place due to the excitement and urgency of the actions. Therefore, it is critical that the environmental representatives monitor beddown activities and provide environmental awareness instruction and consultation.

6.3.3.1 **Hazardous Waste.**

- Identify hazardous waste based on user knowledge of the process and material
- Establish an initial (satellite) accumulation point within the unit if hazardous waste is generated. This point allows for storage of up to 55 gallons of hazardous waste or 1 quart of acutely hazardous waste. Consult environmental flight or environmental POC for deploying force to determine hazardous waste storage procedures.
- Locate waste facilities downstream and downwind from all water sources and barracks.
- Mark and segregate all wastes. Do not mix different types of hazardous wastes. Mixing of incompatible materials can cause fire, dangerous reactions, toxic gas generation, or explosion.

6.3.3.2 **Hazardous Materials.**

- When a material is issued, ask supply to provide a copy of the MSDS, so it can be reviewed by personnel using the material.
- Ensure that all hazardous materials are marked, so that users can obtain and utilize the correct materials.
- Store hazardous materials in clearly labeled containers that are sealed when not in use.
- Ensure that fire protection and bioenvironmental engineering have identified incompatible materials and recommended safe storage requirements.
- Use non-hazardous substitutes to the maximum extent possible.
- Ensure that adequate protective equipment is available.

6.3.3.3 **Solid Waste.**

- Obtain necessary equipment for creating and managing the landfill or burn area, such as a backhoe and/or front end loader.
- Install landfills or burn areas at least 30 yards downstream and downwind of the camp and all water sources and outside of areas where leaching or seepage may carry waste or waste constituents to water-bearing strata or wells.
- Locate landfills or burn areas on stable soil and not on exposed rock strata.
- Construct landfill or burn area trenches perpendicular to the prevailing winds, if possible. Trenches should be deep enough to contain the anticipated long-term volume.

6.3.3.4 Non-Hazardous Liquid Wastes and Water Resources.

- Locate activities requiring large amounts of potable water near tank farms or terminals to minimize transportation requirements and losses during handling.
- Locate facilities using non-potable water, such as fire fighting equipment and vehicles, near a suitable generator of wastewater.
- Limit the use of showers by turning them off when not in use, and/or turning boilers off when not in use.
- Eliminate water that has pooled due to poor drainage or in bermed areas. Standing or stagnant water may breed pests.
- Reuse laundry rinse water as laundry wash water.
- Protect potable water from all sources of contamination (including sand/dust).
- Prohibit water thievery from storage containers and pipelines and the indiscriminate use of expedient showers.

6.3.3.5 Spill Prevention and Response.

- Contact the fire or emergency response unit if a spill occurs.
- Attempt to procure 55-gallon drums, shovels, and kitty litter for use to respond to spills.
- Prevent all spills from entering surface water sources, and porous soil that is located near water-bearing strata.

- Contact the environmental flight of the installation supporting the deployment to inform them of the quantity and type of material that was spilled, so they may determine whether any reports are required to regulatory officials.

6.3.3.6 Air Pollution.

Coordinate with environmental function of installation supporting the deployment to ensure that all air emissions sources used for the deployment are approved, or waivers or variances have been granted.

6.3.3.7 Natural and Cultural Resources.

- Minimize removal of vegetation and soil, as applicable to situation during activities.
- Ensure cultural resources or endangered species located within the deployment area are left outside of primary land use areas and are not damaged.
- Minimize operations in the vicinity of wetlands or on erodable slopes.

6.3.3.8 Pollution Prevention and Conservation.

- Identify and install equipment needed to implement recycling/reuse procedures.
- Set up recycling areas with appropriate equipment.
- Turn off lights when leaving a facility/tent and turn off non-essential computers when not in use.
- Ensure that condenser coils on air conditioning equipment remain clean.
- Clean steam traps and fix stuck dampers.
- Check, adjust, or replace fan belts on equipment.
- Keep bearings and other friction points lubricated.
- Ensure that berms are constructed for all fuel bladders.
- Protect cables that cross roads from vehicles.
- Place all generators in backup mode once power plant electrical service is available.

- Shift power loads during peak and non-peak usage times to aid in maximizing energy resources.
- Use non-hazardous substitutes to the maximum extent possible.
- Limit the use of showers by turning them off when not in use, and/or turning boilers off when not in use.
- Reuse laundry rinse water as laundry wash water.

6.3.3.9 Pesticides.

- Non-chemical methods of insect, weed, and rodent control, including increased sanitation should be attempted before pesticides are used.
- Use repellents for personnel protection.
- All personnel should be notified before pesticide applications occur to allow clothing, food, and other sensitive items to be covered.
- Maintain a record of all pesticide applications.
- Pesticides should be stored to prevent accidental contamination of food or water.
- Each pesticide should be clearly labeled and sealed when not in use.
- Pesticide containers should be triple rinsed, punctured, and disposed of in accordance with label directions. Dispose of in accordance with the OPLAN.
- Contract pesticide application and locally procured non-standard pesticides must be approved by the area entomologist.

6.3.3.10 Air and Surface Noise.

Continue to minimize noise emissions to the greatest extent practicable.

6.4. SUSTAINMENT.

Now that mission critical systems are all in place, the focus can turn to resupplying and preparing for a long term deployment. This is an excellent opportunity to increase the level of environmental stewardship.

6.4.1 **Work with Theater Component/Host Base Environmental Function.**

Consult theater component/environmental function about environmental problems encountered during the beddown phase and determine the most efficient way to solve these problems for sustainment. Discuss any additional personnel and equipment requirements.

6.4.2 **Monitor Environmental Issues and Utilize Risk Assessment Matrices.**

Continue to monitor environmental compliance issues to insure the level of compliance and stewardship continues to increase. Identify and correct violations of environmental requirements. An important tool in monitoring environmental compliance is the use of the environmental risk assessment matrices found in Chapter 8. The matrices should be updated to account for special obstacles and difficulties encountered during the beddown phase.

6.4.2.1 **Hazardous Waste.**

- Mark and segregate all hazardous wastes. The deployed civil engineer or unit environmental coordinator should have hazardous waste markings. Use these markings to identify the hazardous contents of your waste. If markings are unavailable, mark containers in the most appropriate manner feasible.
- Identify hazardous waste based on bioenvironmental engineer sampling and analysis results or user knowledge of the process and material, i.e. by reviewing the MSDS.
- Provide secondary containment or berms for all waste containers.
- Obtain spill response equipment (e.g., absorbents, speedi-dry, overpacks for drums).
- Contact environmental function, theater component, or DRMO if unsure of proper handling procedures. **Never bury or dump your hazardous waste.**
- Keep records of materials placed in drums.
- Turn in full drums to the hazardous waste storage area. Contact theater component/environmental function if unsure of procedures.

- Keep drums closed when not in use.
- Consult installation environmental Flight or Theater environmental coordination for any time constraints on storage and disposal requirements, especially storage durations for hazardous wastes.

6.4.2.2 **Hazardous Materials.**

- When a material is issued, ask supply to provide a copy of the MSDS so it can be reviewed by personnel using the material.
- Ensure that all hazardous materials are marked, so that users can obtain and utilize the correct materials.
- Store hazardous materials in clearly labeled containers that are sealed when not in use.
- Ensure that fire protection and bioenvironmental engineering have identified incompatible materials and recommended safe storage requirements.
- Redeployment becomes more costly and time consuming with the amount of hazardous materials needing disposal. Moving hazardous materials or expired shelf-life material during redeployment is a logistical challenge and requires coordination between different flights and installations. Avoid this situation by controlling/reducing the amount of hazardous materials ordered.
- In case of hazardous materials spill, contact spill response team or fire department.
- Be conscious of the waste you are generating when applying or using hazardous materials, as the waste material may need to be properly managed as hazardous waste.

6.4.2.3 **Solid Waste.**

- Consider recycling/reuse of materials or other methods to reduce the volume of materials that are to be disposed of.
- Ensure the landfill receives a daily cover of at least 6" and a final cover of at least 24".
- Establish procedures to discourage disposal of hazardous materials and hazardous waste as solid waste.

- Burn waste only as a last resort. Ensure that all burning takes place downwind and at a significant distance away from the camp. Ensure that burning has been approved by the civil engineer function, theater component, or DRMO (when DRMO is managing the deploying forces waste removal).
- Make sure equipment is available to properly operate the landfill or burn area.

6.4.2.4 **Non-Hazardous Liquid Wastes.**

- Reuse laundry rinse water as laundry wash water.
- Protect potable water from all sources of contamination (including sand/dust).
- Prohibit water thievery from storage containers and pipelines and the indiscriminate use of expedient showers.
- Eliminate water that has pooled due to poor drainage or in bermed areas. Standing or stagnant water may breed pests.

6.4.2.5 **Spill Prevention and Response.**

- Obtain/order spill response equipment through supply channels. Necessity of equipment is dependent upon the function and the estimated duration of the deployment.
- Review spill response procedures with troops. In case of fire or spill: alert individuals in area of the spill; isolate the area; notify the fire department/emergency response team; respond to the spill if it is within your capability.
- Periodically check the equipment to ensure it is in good working condition.

6.4.2.6 **Air Pollution.**

- Minimize hazardous air emissions that are posing an inhalation risk to the troops. Work with bioenvironmental engineering and the civil engineer function to identify such risks, and methods for risk reduction.
- If hazardous air pollutants are identified, ensure that their emissions do not exceed levels specified in permits, variances or waivers. Coordinate

with environmental function and write maximum source standards and emission levels into OPLAN.

6.4.2.7 Natural and Cultural Resources.

Work with appropriate host nation representatives to identify ways to minimize damage to surrounding natural and cultural resources, and execute actions as applicable to situation.

6.4.2.8 Pollution Prevention and Conservation.

- Evaluate whether additional recycling equipment can be used (i.e., antifreeze recyclers, freon recyclers, aerosol can crushers) and determine what is available.
- Order and install equipment needed for recycling while time and resources are available.
- Train personnel on recycling/reuse procedures.
- Place appropriate labels on recycled material that will be returned to an overseas DoD or US installation and maintain documentation listing the materials and their intended uses.
- Turn off lights when leaving a facility/tent and turn off non-essential computers, when not in use.
- Reuse laundry rinse water for laundry wash water.
- Ensure that condenser coils on air conditioning equipment remain clean.
- Check, adjust, or replace fan belts on equipment.
- Keep bearings and other friction points lubricated.
- Ensure that berms are constructed for all fuel bladders.
- Protect cables that cross roads from vehicles.
- Place all generators in backup mode once power plant electrical service is available.
- Shift power loads during peak and non-peak usage times to aid in maximizing energy resources.

6.4.2.9 Pesticides.

- Use repellents for personnel protection

- Non-chemical methods of insect, weed and rodent control, including increased sanitation should be attempted before pesticides are used.
- All personnel should be notified before pesticide applications occur to allow clothing, food, and other sensitive items to be covered.
- Maintain a record of all pesticide applications.
- Pesticides should be stored to prevent accidental contamination of food or water.
- Each pesticide should be clearly labeled and sealed, when not in use.
- Pesticide containers should be triple rinsed, punctured, and disposed of in accordance with label directions. Dispose of in accordance with the OPLAN when overseas, as can puncturers may not be available.
- Contract pesticide application and locally procured non-standard pesticides must be approved by the area entomologist.

6.4.2.10 Air and Surface Noise.

Ensure that any increase in the number of sorties to be flown, number of equipment to be used, time and intensity of noise duration, and maximum decibel levels, or change in the hours of operation are authorized in accordance with local noise regulations and approved by the environmental flight supporting the deployment.

6.4.3 Update Environmental Plan as Needed.

The Environmental Plan should be updated as needed throughout the sustainment phase, especially when mission requirements change.

6.4.4 Continue Awareness Training.

Administer refresher environmental awareness training to all units involved in the contingency operations units. Establish SOPs for hazardous and solid waste transport and storage.

6.5 REDEPLOYMENT.

At the completion of the contingency operation, the redeployment phase commences. The Air Force strives to restore the contingency operation site

to its predeployment state. After this phase, the area will be returned to the DoD facility.

6.5.1 Work with Theater Component/Host Base Environmental Function.

Coordination with the theater component/environmental function is important in this final phase of the contingency operation. The theater component/environmental function will designate the proper procedures for clean-up and returning the area to the host nation or DoD installation.

6.5.2 Hazardous Waste Storage and Disposal.

Once the contingency operation is complete, the hazardous waste must be prepared for transport, storage and disposal. Proper packaging/shipping containers, labels, MSDSs, and disposal instructions should be obtained prior to deployment. The EPA hazardous waste marking (shown in figure 4.1) is recommended and is available from the civil engineer office. If markings are not available, use a stencil or marking pen to mark containers with the required information. Containers must be marked with the words 'Hazardous Waste' or other words that identify the contents of the container. This marking is critical to ensuring that the waste is assigned proper disposal or treatment. Containers of waste should also be marked with appropriate DoT hazardous material labels, such as the example shown in figure 4.2. A manifest or other shipping papers may also need to be completed if the waste is being transported from the deployment area. Coordinate these efforts with DRMO, the environmental flight, or the theater environmental coordinator.

6.5.2.1 Using the Defense Reutilization and Marketing Organization as Disposal Agent.

DRMO has the capability to dispose of hazardous waste from contingency operations. The viability of this option is driven by the cost of disposal, proximity of the nearest DRMO, and restrictions of transport of hazardous waste. DRMO can generally serve as the disposal agent or recommend a local disposal contractor. DRMO can also assist with meeting regulatory compliance requirements. If DRMO is not available, coordinate these efforts

with the host base environmental function and the deployed environmental function.

6.5.2.2 Disposal as a Site Responsibility.

The commander of the contingency operation must ensure that the hazardous waste generated by the operation is disposed of in a legal, efficient, and environmentally sound manner.

Arrangements must be made, with as much lead time as possible, regarding the method of transport for the hazardous waste. Vehicles, ships or aircraft must meet host nation and international environmental regulations for transport of hazardous waste. In addition, a written confirmation must be obtained stating that the receiving facility agrees to take the waste.

Host nation environmental regulations must be consulted to ensure compliance when shipping within a host nation. International regulations must be consulted to ensure compliance when shipping in international waters or airspace. Consult with the theater component/host base environmental function or DRMO for information.

6.5.2.3 Turning over to Host Nation.

Arrangements with host nation disposal facilities must be made according to host nation and USAF policy. The theater component must approve all host nation contracts and approve all turnover to the host nation.

6.5.3 Hazardous Material Labeling and Packaging.

Hazardous material being transported from the contingency must be properly packaged and labeled to ensure full compliance with the host nation or international laws. Hazardous materials should not be confused with hazardous wastes. Hazardous wastes are destined for disposal and are not being considered for reuse; whereas, unused hazardous materials, such as fuels and paints can be reused in a process.

Ensure containers of hazardous material are properly packaged. Containers must be closed, secured, palletized and packaged according to host nation or international laws pertaining to the mode of transport. Consult theater component/host base environmental function for additional information.

Ensure packages containing hazardous material are properly labeled. The labeling method used must comply with the host nation or international laws pertaining to the mode of transport. Consult theater component/host base environmental function or DRMO for additional information and to determine whether placards, or shipping papers are required.

6.5.4 Redeployment Requirements for Wastewater and Solid Waste.

Coordinate with theater component/environmental flight on abandonment or disposal requirements for wastewater and solid waste facilities. Ensure photographs are taken of the landfill, latrine, and waste storage areas. Consult applicable host nation and USAF regulations to ensure compliance.

6.5.4.1 Mark or Map as Necessary.

Abandoned wastewater and solid waste facilities should be marked or mapped to identify their exact location. Permission from the theater command must be granted before any maps are given to the host nation, unless there is a prior written agreement to do so.

6.5.5 Natural and Cultural Resources and Wetlands.

Natural and cultural resources and wetlands must be returned to their original state to the highest extent possible and feasible. Coordinate with theater component for more information on turning area over to host nation.

6.5.6 Additional Redeployment Responsibilities.

6.5.6.1 Hazardous Waste.

- In many locations, all waste must be turned in with the appropriate MSDS. Proper segregation and marking of hazardous waste can save significant amounts of money in sampling and disposal costs. The

marking, figure 4.1, may also be used overseas, before and during transport of hazardous waste.

- Prior to loading hazardous waste onto cargo planes, obtain approval from theater component and the installation receiving the waste.
- Ensure proper manifests or bills of lading have been generated and approved. If required, ensure that DoT labels are placed on containers prior to transport.

6.5.6.2 Hazardous Materials.

- Ensure containers are marked, sealed and secured before shipping.
- Coordinate with the civil engineer unit and supply to determine whether DoT labels are required.
- Contact the appropriate theater component or DRMO to determine proper procedures for disposal of unused hazardous materials.
- Abandonment of hazardous material or waste can result in fines by a host nation for any damages that occur as a result of abandonment. Never abandon hazardous materials.

6.5.6.3 Solid Wastes.

- Take pictures of the solid waste disposal area after the deployment as legal documentation of the proper procedures taken to dispose of waste.
- Ensure that all closed landfills are marked as such when closed.

6.5.6.4 Non-Hazardous Liquid Wastes and Water Resources.

- Take photographs of latrine before leaving area.
- Mark latrine as such with a sign showing the date of closure and the words "Closed Latrine", after covering with approximately 24" of soil.

6.5.6.5 Spill Prevention and Response.

- Drum any contaminated soil or emergency response equipment (that cannot be cleaned or reused) generated as a result of a spill.
- Mark the drum as spill contaminated material. For example, a drum of soil contaminated with MEK should be marked, "MEK contaminated soil".

- Ensure drum is taken to appropriate waste management area and arrangements are made for its disposal or transport. Coordinate these activities with the waste site manager, usually the civil engineer or DRMO.

6.5.6.6 Air Pollution.

During redeployment activities, minimize emissions to the greatest extent practicable, i.e. do not burn waste or trash unless a permit has been obtained by the environmental function authorizing open burning.

6.5.6.7 Natural and Cultural Resources.

Restore natural and cultural resources to their predeployment state to the greatest extent practicable.

6.5.6.8 Pollution Prevention.

- Follow redeployment procedures.
- Make recommendations through the civil engineer unit chain-of-command for ways to increase recycling activities in future operations.
- When deploying overseas, ensure that any materials that will be recycled and returned to an overseas DoD or US installation have been approved for cargo loading by the appropriate theater component/environmental flight.
- Follow post deployment requirements and submit documentation as required by theater component or other responsible parties, e.g., environmental function at a host DoD installation

6.5.6.9 Pesticides.

- Retrograde cargo and aircraft disinsection should only be conducted when required by US military customs or host nation officials.
- Follow hazardous material shipping requirements.

6.5.6.10 Air and Surface Noise.

Minimize noise pollution during redeployment activities by redeploying in accordance with the specifications outlined in the OPLAN.

Table 6.2, Contingency Environmental Compliance, summarizes suggested actions for deployed forces to meet compliance requirements.

Table 6.2. Contingency Environmental Compliance.

CONTINGENCY ENVIRONMENTAL COMPLIANCE		
If you're in:	And you're in the following phase:	Then to meet compliance requirements:
Exercise or contingency operation at an overseas DoD installation	PREDEPLOYMENT	<ul style="list-style-type: none"> • Plan operations with appropriate consideration of their effect on the environment in accordance with applicable US and host nation agreements, environmental laws, policies, and regulations.
		<ul style="list-style-type: none"> • Conduct environmental reviews in accordance with DoD Directive 6050.7 and the OEBGD and applicable FGS.
		<ul style="list-style-type: none"> • Check that no host nation environmental restrictions are required by SOFA/other international agreements.
		<ul style="list-style-type: none"> • Review the existing environmental plan and include it as an appendix or annex in the OPLAN under which units will deploy..
	INITIAL BEDDOWN	<ul style="list-style-type: none"> • Comply with environmental plan. Implement actions to prevent environmental damage. Work with theater component/environmental flight.

Table 6.2. Contingency Environmental Compliance (Cont'd).

Contingency Environmental Compliance		
If you're in:	And you're in the following phase:	Then to meet compliance requirements:
Exercise or contingency operation at an overseas DoD installation (Con't)	SUSTAINMENT	<ul style="list-style-type: none"> • Monitor environmental issues, compliance and awareness. Work with theater component/environmental flight.
	REDEPLOYMENT	<ul style="list-style-type: none"> • Accomplish deployment requirements and documentation as required by theater component.
Contingency situation with armed conflict or the threat of armed conflict at an overseas DoD installation	ANY OF THE PHASES	<ul style="list-style-type: none"> • Make every effort to comply with environmental regulations, agreements, and policies. If deployment operations do not permit compliance, use common sense and consult the environmental function for purposes of requesting an Executive Emergency Exemption..



THIS PAGE IS INTENTIONALLY LEFT BLANK.



7.0 RISK MANAGEMENT DURING CONTINGENCY OPERATIONS AT OVERSEAS NON-DoD INSTALLATIONS

The key to environmental risk management is analyzing the risk of the environmental impacts created during contingency operations. Personnel must integrate risk analysis into the overall planning of the contingency operation for successful environmental protection. This chapter addresses:

- Environmental risk assessment techniques.
- Practices that when implemented reduce or eliminate risks to human health or the environment during the contingency operations.
- Levels of environmental compliance expected at various stages of a contingency operation at non-DoD installations.

7.1 CONTINGENCY OPERATIONS.

Deployed forces in situations involving armed conflict or the threat of armed conflict are strongly encouraged to fight as trained - with appropriate consideration of environmental impacts and the mission.

Levels of environmental compliance vary within each of the four phases of a deployment, as described in table 7.1. Factors affecting environmental compliance include length of deployment, time restraints, location of operation, and the purpose of the operation. Each phase must be thoroughly planned and executed to minimize the risks to human health and the environment. During all phases and situations of deployment, consult with the applicable theater component for guidance on environmental stewardship challenges.

Contingency operations at overseas non-DoD installations provide the greatest challenge for environmental stewardship. This contingency operation may involve any or all of the following factors: armed conflict, no Final Governing Standards (FGS), little to no information about

Table 7.1. Contingency Compliance.

PHASE	LEVEL OF COMPLIANCE
Predeployment	The predeployment phase ensures that the deployment proceeds smoothly through planning and training. Planning environmental strategies prior to deployment ensures greater compliance during all phases of deployment. Increase the emphasis on environmental planning and preparedness during this phase to achieve the highest level of compliance achievable under the circumstances.
Beddown	The beddown phase usually has the greatest impact on the environment. Typically, compliance during beddown is lower than during other contingency phases, particularly during an armed conflict deployment. This is where planning for compliance has the greatest benefit. Institute proper environmental procedures immediately to minimize noncompliance.
Sustainment	Monitor environmental compliance steadily during sustainment. As time becomes available, order additional equipment and make facility and operational modifications to improve compliance.
Redeployment	Environmental compliance must be a high priority during this phase as the area of operation is returned to its predeployment state.

environmental regulations, and very little time to prepare and deploy for exercises, military operations other than war (MOOTW), or major combat

operations. In this situation, apply your resources (time, knowledge, manpower, etc.) where they will do the greatest good. Focus on the issues that immediately and drastically affect the health of DoD personnel. This includes proper placement and storage of hazardous materials and waste and ensuring safe drinking water for personnel. As the beddown phase evolves to the sustainment phase, environmental stewardship can become more comprehensive as environmental practices can be integrated into operational practices with a greater allowance of time and equipment.

As with any type of contingency situation, you need to know where to gather the information needed to complete your environmental plan. For deployments to overseas non-DoD installations, contact the civil engineer of the installation supporting the deployment. If there is not one available, work with the theater component. Either resource, contacted as early in the process as possible, is sure to save valuable time in developing the environmental plan.

Sections 7.2-7.5 discuss the environmental issues involved in the phases of deployment (i.e., predeployment, initial beddown, sustainment, and redeployment). Following these sections, table 7.2 illustrates fundamental steps that can be taken for each type of aforementioned contingency operation.

7.2 PREDEPLOYMENT.

Stress the importance of environmental planning to ensure compliance during exercises and contingency operations. Knowledge of environmental requirements prior to deployment is essential. Exercise or contingency planners must initiate the environmental impact analysis process and prepare a contingency specific environmental plan during predeployment. These documents and other relevant environmental issues which will be performed during predeployment are discussed below.

7.2.1 Environmental Impact Analysis Process.

At non-DoD installations, the EIAP (in a slightly altered form) is required under Executive Order 12114. If units from more than one installation are deploying to the same location, coordination of EIA efforts is recommended to avoid duplication of work. The EIAP is not required on deployments with armed conflict or the threat of armed conflict. In these situations, contact the Civil Engineer as soon as possible. EIAP requirements at overseas non-DoD installations are explained in annex B.

7.2.2 **Environmental Plan.**

Develop and comply with the Environmental Plan as referenced in JCS Publication 4-04 and AFI 32-7006. This plan, also called the exercise or contingency specific environmental plan, shall be included as an appendix or annex to the OPLAN under which units deploy. The Environmental Plan must specify environmental responsibilities and policies on the issues numbered below as well as other relevant environmental areas.

- Policies and responsibilities to protect and preserve the environment.
- Certification of local water sources by appropriate medical field units.
- Solid and liquid waste management.
 - ◆ Open dumping.
 - ◆ Open burning.
 - ◆ Disposal of gray water.
 - ◆ Disposal of pesticides.
 - ◆ Disposal of human wastes.
 - ◆ Disposal of hazardous waste.
- Hazardous materials management, including the potential use of pesticides.
- Flora and fauna protection.
- Archeological and historical preservation.
- Spill response (including responsibilities, capabilities, and equipment).

For deployments to overseas non-DoD installations and foreign countries, the environmental plan should include sufficient detail to ensure that the deploying forces have the information needed for full compliance with applicable environmental requirements.

7.2.3 **Environmental Awareness Training.**

Promote environmental stewardship during exercises and deployment actions by implementing or continuing environmental awareness training. Train personnel handling hazardous materials or hazardous waste in hazard communication and hazardous waste management awareness. Make environmental information available to USAF personnel during an exercise or deployment situation. Brief USAF personnel on the environmental areas of concern for the particular training area.

7.2.4 **Environmental Risk Assessment Matrices.**

Use of environmental risk assessment matrices is an excellent method of ensuring all areas of environmental concern are addressed. The matrices can be used to identify planned activities that may damage the environment, make adjustments to the planned actions and minimize adverse effects on the environment without impairing the mission. The exercise or contingency planner, the unit leader, or the designated environmental coordinator can complete the matrices. The contingency planner, whose perspective is a broad overview of activities of the entire deploying force, can use the matrices to assess the environmental impacts of those activities. Unit personnel can use the matrices to assess the environmental impacts of routine and non-routine unit activities. (See chapter 8 for an illustration of the matrices and their usage.)

7.2.5 **Environmental Issues.**

Information must be gathered concerning USAF and host nation agreements in the deployment region during every contingency operation. These agreements will guide the environmental compliance requirements for the deployment.

The types of information listed below must be gathered to complete the EIAP and environmental annex to the OPLAN. This information will also guide personnel in understanding their compliance requirements, which will vary within different countries and regions. When at a non-DoD installation, coordinate the gathering of information with deployed civil engineer

environmental function, or theater component if the civil engineer is not present.

7.2.5.1 **Hazardous Waste.**

- Identify disposal agent, i.e. DRMO, local contract.
- Identify whether storage volume and time limits are applicable.
- Identify potential waste streams.
- Identify proper procedures for segregation and storage. This includes site location, transportation requirements, and labeling procedures.
- Ensure that the hazardous waste manager has had hazardous waste management training.
- Identify storage and disposal methods and the individual with hazardous waste responsibility within the unit.

7.2.5.2 **Hazardous Material.**

- Obtain MSDSs for every chemical product used within your unit.
- Ensure unit environmental coordinator has appropriate hazardous material/hazardous waste training; it is recommended all personnel receive HAZCOM training before handling hazardous materials.
- Identify a single hazardous materials point of contact for your unit to coordinate with the civil engineer unit and supply.
- Estimate what your hazardous materials requirements may be during the operation.
- Obtain what is required to complete your mission with a contingency built in for emergency, but do not hoard material that will not be used.
- Establish hazardous materials spill response procedures.
- Use the hazardous materials pharmacy concept to the extent possible.

7.2.5.3 **Solid Waste.**

- Identify whether authorization is required for creating a solid waste landfill or burn area or whether, DRMO, CE, or the theater component has hired a local waste hauler.

- Take pictures of the solid waste disposal area before the deployment, if possible, as legal documentation of the proper procedures taken to dispose of waste. These pictures are valuable tools when a land owner or host nation wrongly accuses the Air Force of damaging land utilized for the deployment.
- If no solid waste contract is in place, consider the feasibility of creating a landfill.
- Identify procedures within the unit for solid waste collection and hauling.

7.2.5.4 Non-Hazardous Liquid Wastes and Water Resources.

- Ensure that gray water disposal/discharge is located downstream of all water sources and water wells, including civilian water sources and water wells.
- Ensure that all latrines are located at least 100 yards from mess halls and 30 yards from water sources.
- Ensure that all latrines are installed in accordance with the latest preventative medicine guidance.
- Identify whether approval is required for wastewater discharge and well installation.
- Coordinate with environmental function or theater component regarding well specifications and locations, maximum contaminant levels, turbidity requirements.
- Identify water testing and treatment requirements for the unit.
- If contaminated surface water is adjacent to site, ensure it is not capable of entering wastewater system, as it can impact integrity of treatment efforts.
- Identify wastewater discharge procedures and chemical treatment requirements.
- Construction and site location for wastewater treatment operation must be approved by civil engineering or theater component.

7.2.5.5 Spill Prevention and Response.

Identify your spill response capabilities, including proximity to fire department or spill response team, and available equipment.

7.2.5.6 Air Pollution.

- Identify whether emissions are regulated for certain types or volumes of equipment that will be used.
- Locate all sources of fossil fuel burning and trash burning downwind from the camp.
- Ensure that hazardous emissions sources are far enough away from troops so that they do not pose breathing hazards. If this is unavoidable, ensure that respiratory equipment is available.

7.2.5.7 Natural and Cultural Resources.

- Determine whether documented historical, archaeological, or sacred sites or cemeteries exist in or around the deployment area. If they do, consider relocating if it does not pose an impact to the mission.
- If located in prime forest lands, minimize vehicular traffic and activities that require deforestation to the greatest extent practicable.
- Determine whether activities are impacting endangered or threatened species, or sensitive habitats in or around the deployment area.
- Identify whether wetlands exist in the deployment area. If they do, consider whether industrial operations such as refueling posing a potential runoff into the wetland. If this is the case, water well sources are likely to be contaminated from the runoff. If possible, avoid establishing camp on a wetland. If not possible, ensure that wetland is located downgradient from all water sources.

7.2.5.8 Pollution Prevention and Conservation.

- Order only as much hazardous material as needed eliminating excess hazardous materials, which, if discarded, could result in significant costs for disposing as hazardous waste. Efficient ordering and distribution of hazardous materials should occur as close to stateside installation operations as possible.

- Assess the feasibility of reusing fuel and other materials. Examples include: recycling used oil drained from equipment and generators; recycling used antifreeze; and reusing contaminated fuel in heat generating burners.
- Incorporate the recycling/reuse ideas into the contingency's standard operating procedures.
- Plan for the use of seawater, brackish water or gray water for concrete, soil compaction, soil cement, and dust control, as appropriate.
- Plan for the use of alternatives for disposing of water that may have some useful purpose. For example, water that is too hot to be palatable can be used for equipment cleaning or laundry.
- Establish energy conservation procedures and brief deploying personnel on their importance, such as conserving fuel and electricity resources.

7.2.5.9 **Pesticides.**

- Obtain copies of labels and MSDSs for all pesticides and repellents that will be used within the unit.
- Ensure proper personal protective equipment and repellents are available (including respirator cartridges).
- Provide unit level training to all personnel to ensure individuals understand exposure
- Educate personnel on the possibility of pesticides setting off chemical alarms.
- Train personnel on proper use of insect repellents.
- Determine if pesticides banned by EPA are commonly used on food or for disease vector control.
- Identify wildlife or wetlands that may be adversely affected by pesticide use.
- Assess environmental impacts of potential aerial application of pesticides.

7.2.5.10 **Air and Surface Noise.**

Identify whether air and surface noise planning is required. If it is, identify required items such as maximum decibel levels; number and types of aircraft

to be used; types and number of equipment to be used; operations or sorties to be flown; time and intensity of noise duration; or hours of operation.

7.3 INITIAL BEDDOWN.

During beddown, awareness of environmental issues and adherence to the environmental plan is essential while performing the initial duties of making utility systems and support facilities operational. The rule of thumb during this environmentally challenging stage is to minimize impacts to human health and the environment without impairing the mission. During wartime operations, comply with environmental requirements to the maximum extent possible without impairing the mission.

7.3.1 Work with Deployed USAF Civil Engineer or Theater Component.

The civil engineer is the central point of contact for environmental issues, when deployed. Consult the civil engineer or theater component when questions concerning environmental regulations cannot be answered by the unit environmental point of contact. The theater component is also a source of information on specific environmental issues (weather patterns, important geographic features, etc.) for the particular deployment location. When the civil engineer is not present, work with the theater component for approval of hazardous and solid waste storage and disposal, and other environmental requirements.

7.3.2 Revise/Update Environmental Plan.

During initial beddown, note special obstacles and difficulties encountered during the deployment which would make the current plan inefficient or unworkable. Request approval to deviate from the plan, if necessary. Forward all proposed changes to the environmental plan through the chain-of-command to the theater component during the sustainment phase of the operation or when the deployment is completed. Refer to the environmental annex to the OPLAN.

7.3.3 **Monitor Environmental Issues.**

Completing the mission is paramount. However, environmental stewardship can complement and enhance the mission. Beddown activities should be monitored for environmental compliance. Unless there is a declared war which may affect applicability of environmental laws, contingency operations will have to comply with existing environmental regulations and requirements in host nation agreements, FGS, treaties, or OEBGD. Beddown is a critical time where spills, unauthorized releases, and other potential detrimental environmental actions can take place due to the excitement and urgency of the actions, and which may result in contamination of water supplies, food, equipment, and endanger the health and welfare of personnel. Therefore, it is critical that the environmental representatives monitor beddown activities and provide environmental awareness instruction and consultation.

7.3.3.1 **Hazardous Waste.**

- Mark and segregate all wastes. Do not mix hazardous wastes. Incompatible materials can cause fire, toxic gas or explosion.
- Identify hazardous waste based on user knowledge of the process and material. Reviewing an MSDS is an easy proven method.
- Establish a hazardous waste accumulation area within the unit (if hazardous waste is generated). Identify procedures for waste pickup/disposal.
- Consult environmental flight or environmental POC for deploying force to determine hazardous waste storage procedures, i.e. labeling requirements, collection.
- Locate deploying forces primary hazardous waste storage area downstream and downwind from all water sources and barracks.

7.3.3.2 **Hazardous Materials.**

- When a material is issued, ask supply to provide a copy of the MSDS, so it can be reviewed by personnel using the material, as applicable to situation.

- Ensure that all hazardous materials are marked, so that users can obtain and utilize the correct materials.
- Store hazardous materials in clearly labeled containers that are sealed when not in use.
- Ensure that fire protection and bioenvironmental engineering have identified incompatible materials and recommended safe storage requirements.
- Ensure that adequate protective equipment is available.

7.3.3.3 **Solid Waste.**

- Obtain necessary equipment for creating and managing the landfill or burn area, such as a backhoe and/or front end loader.
- Install landfills or burn areas at least 30 yards downstream and downwind of the camp and all water sources and outside of areas where leaching or seepage may carry waste or waste constituents to water-bearing strata or wells.
- Locate landfills or burn areas on stable soil and not on exposed rock strata.
- Construct landfill or burn area trenches perpendicular to the prevailing winds, if possible. Trenches should be deep enough to contain the anticipated long-term volume.

7.3.3.4 **Non-Hazardous Liquid Wastes and Water Resources.**

- Locate activities requiring large amounts of potable water near tank farms or terminals to minimize transportation requirements and losses during handling.
- Locate facilities using non-potable water, such as fire fighting equipment and vehicles, near a suitable generator of wastewater.
- Protect potable water from all sources of contamination (including sand/dust).
- Ensure that water storage containers and pipelines are built and constructed so that they will be secure from water thievery or contamination.
- Eliminate water that has pooled due to poor drainage.

7.3.3.5 Spill Prevention and Response.

- Attempt to procure 55-gallon drums, shovels, and kitty litter for use to respond to spills.
- Prevent all spills from entering surface water sources, and porous soil that is located near water-bearing strata.
- Contact the fire or emergency response unit if a spill occurs. Respond to spill only if it is within your capability, and adequate equipment is available.

7.3.3.6 Air Pollution.

Continue to minimize air emissions to protect health of the troops and the surrounding environment.

7.3.3.7 Natural and Cultural Resources.

Minimize removal of vegetation and earth, as applicable to situation during activities.

7.3.3.8 Pollution Prevention and Conservation.

- Ensure that berms are constructed for all fuel bladders.
- If applicable, identify, order and install equipment needed to implement recycling/reuse procedures.
- Set up recycling areas with appropriate equipment, as applicable to situation.
- Turn off lights when leaving a facility/tent and turn off non-essential computers when not in use.
- Check, adjust, or replace fan belts on equipment.
- Keep bearings and other friction points lubricated.
- Protect cables that cross roads from vehicles.
- Place all generators in backup mode once power plant electrical service is available.

7.3.3.9 Pesticides.

- Use repellents for personnel protection.

- Non-chemical methods of insect, weed, and rodent control, including increased sanitation should be attempted before pesticides are used.
- All personnel should be notified before pesticide applications occur to allow clothing, food, and other sensitive items to be covered.
- Maintain a record of all pesticide applications.
- Each pesticide should be clearly labeled and sealed, when not in use.
- Pesticide containers should be triple rinsed, punctured, and disposed of in accordance with label directions. Dispose of in accordance of the OPLAN when overseas, as can puncturers may not be available.
- Contract pesticide application and locally procured non-standard pesticides must be approved by the area entomologist.

7.3.3.10 Air and Surface Noise

Continue to minimize noise emissions to the greatest extent practicable.

7.4 SUSTAINMENT.

Now that mission critical systems are all in place, the focus can turn to resupplying and preparing for a long term deployment. This is an excellent opportunity to increase the level of environmental stewardship.

7.4.1 Work with the Deployed Civil Engineer/Theater Component.

Consult civil engineer or theater component about environmental problems encountered during the beddown phase and determine the most efficient way to solve these problems for sustainment. Discuss any additional personnel and equipment requirements.

7.4.2 Monitor Environmental Issues and Utilize Risk Assessment Matrices.

Continue to monitor environmental compliance issues to insure the level of compliance and stewardship continues to increase. Identify and correct violations of environmental requirements. An important tool in monitoring environmental compliance is the use of the environmental risk assessment matrices found in Chapter 8. The matrices should be updated to account for special obstacles and difficulties encountered during the beddown phase.

7.4.2.1 Hazardous Waste.

- Mark and segregate all hazardous wastes. The deployed civil engineer, DRMO, or your unit environmental coordinator should have hazardous waste markings. Use these markings to identify the hazardous contents of your waste. If markings are unavailable, mark containers in the most appropriate manner feasible.
- Identify hazardous waste based on sampling and analysis results or user knowledge of the process and material.
- Provide secondary containment or berms for all waste containers.
- Obtain spill response equipment (e.g., absorbents, speedi-dry, overpacks for drums), as applicable to situation.
- Contact deployed civil engineer function, DRMO or USAF theater component, if unsure of proper handling procedures. **Never bury or dump your hazardous waste.**
- Keep records of materials placed in drums.
- Turn in full drums to the hazardous waste storage area. Contact deployed disposal authority (civil engineer function, DRMO or theater component) if unsure of procedures.
- Keep drums closed when not in use.

7.4.2.2 Hazardous Materials.

- When a material is issued, ask supply to provide a copy of the MSDS, so it can be reviewed by personnel using the material.
- Ensure that all hazardous materials are marked, so that users can obtain and utilize the correct materials.
- Store hazardous materials in clearly labeled containers that are sealed when not in use.
- Ensure that fire protection and bioenvironmental engineering services have identified incompatible materials and recommended safe storage requirements.
- Redeployment becomes more costly and time consuming with the amount of hazardous materials needing disposal. Moving hazardous materials or expired shelf-life material during redeployment is a logistical challenge and requires coordination between different flights

and installations. Avoid this situation by controlling/reducing the amount of hazardous materials ordered.

- In case of hazardous materials spill, contact spill response team or fire department.
- Be conscious of the waste you are generating when applying or using hazardous materials, as the waste material may need to be properly managed as hazardous waste.

7.4.2.3 **Solid Waste.**

- Consider recycling/reuse of materials or other methods to reduce the volume of materials that are to be disposed of.
- Ensure the landfill receives a daily cover of at least 6" and a final cover of at least 24".
- Establish procedures to discourage disposal of hazardous materials and hazardous waste as solid waste.
- Burn waste only as a last resort and with approval from the chain-of-command. Ensure that all burning takes place downwind and at a significant distance away from the camp. Ensure that burning has been approved by the civil engineer function, theater component, or DRMO (when DRMO is managing the deploying forces waste removal).
- Obtain equipment to properly operate the landfill or burn area, if not accomplished during beddown.

7.4.2.4 **Non-Hazardous Liquid Wastes and Water Resources.**

- Reuse laundry rinse water as laundry wash water.
- Protect potable water from all sources of contamination (including sand/dust).
- Prohibit water thievery from storage containers and pipelines and the indiscriminate use of expedient showers.
- Eliminate water that has pooled due to poor drainage or in bermed areas. Standing or stagnant water may breed pests.
- Limit the use of showers by turning them off, when not in use, and/or turning boilers off when not in use.

7.4.2.5 Spill Prevention and Response.

- Obtain/order spill response equipment through supply channels. Necessity of equipment is dependent upon the function and the estimated duration of the deployment.
- Review spill response procedures with troops. In case of fire or spill: alert individuals in area of the spill; isolate the area; notify the fire department/emergency response team; respond to the spill if it is within your capability.

7.4.2.6 Air Pollution .

Minimize hazardous air emissions that are posing an inhalation risk to the troops. Work with bioenvironmental engineering and the civil engineer function to identify such risks, and methods for risk reduction.

7.4.2.7 Natural and Cultural Resources.

Identify ways to minimize damage to surrounding natural and cultural resources, and execute actions as applicable to situation.

7.4.2.8 Pollution Prevention and Conservation.

- Evaluate whether additional recycling equipment can be used (i.e., antifreeze recyclers, freon recyclers, aerosol can crushers) and determine what is available.
- Order and install equipment needed for recycling while time and resources are available.
- Train personnel on recycling/reuse procedures.
- Place appropriate labels on recycled material that will be returned to an overseas DoD or US installation and maintain documentation listing the materials and their intended uses.
- Turn off lights when leaving a facility/tent and turn off non-essential computers when not in use.
- Ensure that condenser coils on air conditioning equipment remain clean.
- Check, adjust, or replace fan belts on equipment.
- Keep bearings and other friction points lubricated.

- Shift power loads during peak and non-peak usage times to aid in maximizing energy resources.
- Reuse laundry rinse water as laundry wash water.

7.4.2.9 **Pesticides.**

- Use repellents for personnel protection.
- Attempt non-chemical methods of insect, weed and rodent control, including increased before pesticides are used.
- Notify personnel before applying pesticides to allow clothing, food, and other sensitive items to be covered.
- Maintain a record of all pesticide applications.
- Pesticides should be stored to prevent accidental contamination of food or water.
- Each pesticide should be clearly labeled and sealed when not in use.
- Pesticide containers should be triple rinsed, punctured, and disposed of in accordance with label directions. Dispose of in accordance with the OPLAN when overseas, as can puncturers may not be available.
- Contract pesticide application and locally procured non-standard pesticides must be approved by the area entomologist.

7.4.3 **Update Environmental Plan as Needed.**

The Environmental Plan should be updated as needed throughout the sustainment phase. Be sure to update the Environmental Plan when mission requirements change.

7.4.4 **Continue Awareness Training.**

Administer refresher environmental awareness training to all units involved in the contingency operations units. Establish SOPs for hazardous and solid waste transport and storage.

7.5 REDEPLOYMENT.

At the completion of the contingency operation, the redeployment phase commences. The Air Force strives to restore the contingency operation area to its original state. After this phase the area will be again returned to the host nation.

7.5.1 Work with Theater Component /Deployed Civil Engineer.

Coordination with the theater component or civil engineer unit is important in this final phase of the contingency operation. The theater component or civil engineer will designate the proper procedures for clean-up and returning the area to the host nation.

7.5.2 Hazardous Waste Storage and Disposal.

Once the contingency operation is complete, the hazardous waste must be prepared for transport, storage and disposal. Proper packaging/shipping containers, labels, MSDSs, and disposal instructions should be obtained prior to deployment. The EPA hazardous waste marking (shown in figure 4-1) is recommended and is available from the civil engineering office. If markings are not available, use a stencil or marking pen to mark containers with the required information. Containers of waste should also be marked with appropriate DoT hazardous material labels, such as the example shown in figure 4.2. Shipping papers, such as a hazardous waste manifest may also be required. These requirements are dependent upon US and host nation agreements, and the disposition of the waste. Coordinate disposal actions with the host base and/or theater environmental coordinator.

7.5.2.1 Using the Defense Reutilization and Marketing Organization as Disposal Agent.

DRMO has the capability to dispose of hazardous waste from contingency operations. The viability of this option is driven by the cost of disposal, proximity of the nearest DRMO, and restrictions of transport of hazardous waste. The theater component will coordinate waste management and disposal activities through DRMO in most cases. DRMO will then oversee

packaging, transport, and disposal of hazardous materials and hazardous wastes, or may hire a local service contract for the on-site removal of both trash and hazardous waste.

7.5.2.2 Disposal as a Site Responsibility.

The commander of the contingency operation must ensure that the hazardous waste generated by the operation is disposed of in a legal, efficient, and environmentally sound manner.

Arrangements must be made, with as much lead time as possible, regarding the method of transport for the hazardous waste. Vehicles, ships or aircraft must meet host nation and international environmental regulations for transport of hazardous waste. In addition, a written confirmation must be obtained stating that the receiving facility agrees to take the waste.

Host nation environmental regulations must be consulted to ensure compliance when shipping within a host nation. International regulations must be consulted to ensure compliance when shipping in international waters or airspace. Consult with the theater component or DRMO for information.

7.5.2.3 Turning over to Host Nation.

Arrangements with host nation disposal facilities must be made according to USAF and host nation agreements and USAF policy. The theater component or DRMO must approve all host nation disposal contracts.

7.5.3 Hazardous Material Labeling and Packaging.

Hazardous material being transported from the contingency must be properly packaged and labeled to ensure full compliance with the host nation or international laws. Hazardous materials should not be confused with hazardous wastes. Hazardous wastes are destined for disposal and are not being considered for reuse; whereas, unused hazardous materials, such as fuels and paints can be reused in a process.

Ensure containers of hazardous material are properly packaged. Containers must be closed, secured, palletized and packaged according to host nation or international laws pertaining to the mode of transport. Consult theater component for additional information.

Ensure packages containing hazardous material are properly labeled. The labeling method used must comply with the host nation or international laws pertaining to the mode of transport. Consult theater component or DRMO for additional information.

7.5.4 Redeployment Requirements for Wastewater and Solid Waste.

Coordinate with deployed civil engineer function, theater component, or DRMO for disposal requirements for wastewater and solid waste facilities. Ensure photographs are taken of the landfill, latrine, and waste storage areas. Consult applicable host nation and USAF regulations to ensure compliance.

7.5.4.1 Mark or Map as Necessary.

Abandoned wastewater and solid waste facilities should be marked or mapped to identify their exact location.

7.5.5 Natural and Cultural Resources and Wetlands.

Natural and cultural resources and wetlands must be returned to their predeployment state to the highest extent possible and feasible. Coordinate with theater component or deployed civil engineer function for more information on returning area to host nation.

7.5.6 Additional Redeployment Responsibilities.

7.5.6.1 Hazardous Waste.

- In many locations, all waste must be turned in with the appropriate MSDS. Proper segregation and marking of hazardous waste can save significant amounts of money in sampling and disposal costs. The marking, figure 4.1, may also be used overseas, before and during transport of hazardous waste.

- Prior to loading hazardous waste onto cargo planes, obtain approval from theater component or DRMO and the installation receiving the waste.
- If required, ensure proper manifests or bills of lading have been generated and approved.
- If required, ensure that Department of Transportation labels are placed on containers prior to transport.

7.5.6.2 **Hazardous Materials.**

- Ensure containers are marked, sealed and secured before shipping.
- Coordinate with the deployed civil engineer unit and logistics (supply) to determine whether DoT labels are required.
- Contact the appropriate theater component or DRMO to determine proper procedures for disposal of unused hazardous materials.
- Abandonment of hazardous material can result in claims by a host nation for any damages that occur as a result of abandonment. Do not abandon hazardous materials.

7.5.6.3 **Solid Wastes.**

- Take pictures of the solid waste disposal area after the deployment as legal documentation of the proper procedures taken to dispose of waste. These pictures are valuable tools when a land owner or host nation wrongly accuses the Air Force of damaging land utilized for the deployment.
- Ensure that all closed landfills and burn areas are marked as such when closed.

7.5.6.4 **Non-Hazardous Liquid Wastes and Water Resources.**

- Take photographs of latrine before leaving area.
- Mark latrine as such with a sign showing the date of closure and the words "Closed Latrine", after covering with approximately 24" of soil.

7.5.6.5 Spill Prevention and Response.

- Drum any contaminated soil or emergency response equipment (that cannot be cleaned or reused) generated as a result of a spill.
- Mark the drum as spill contaminated material. For example, a drum of soil contaminated with MEK should be marked, “MEK contaminated soil”.
- Ensure drum is taken to appropriate waste management area and arrangements are made for its disposal or transport. Coordinate these activities with the waste site manager, usually the deployed civil engineer or DRMO.

7.5.6.6 Air Pollution.

During redeployment activities, minimize emissions to the greatest extent practicable, i.e. do not burn waste or trash unless a permit has been obtained by the environmental function authorizing open burning.

7.5.6.7 Natural and Cultural Resources.

Restore natural and cultural resources to their predeployment state to the greatest extent practicable.

7.5.6.8 Pollution Prevention and Conservation.

- Follow redeployment procedures.
- Make recommendations through the civil engineer unit chain-of-command for ways to increase recycling activities in future operations.
- When deploying overseas, ensure that any materials that will be recycled and returned to an overseas DoD or US installation have been approved for cargo loading by the appropriate Theater Component.
- Follow post deployment requirements and submit documentation as required by theater component or other responsible parties, e.g., environmental function at a US or DoD installation.

7.5.6.9 Pesticides.

- Retrograde cargo and aircraft disinsection should only be conducted when required by US military customs or host nation officials.

- Follow hazardous material shipping requirements.

7.5.6.10 Air and Surface Noise.

Minimize air and surface noise to the greatest extent practicable during redeployment activities.

Table 7.2, Contingency Environmental Compliance, summarizes suggested actions for deployed forces to meet compliance requirements.

Table 7.2. Contingency Environmental Compliance.

CONTINGENCY ENVIRONMENTAL COMPLIANCE		
If you're in:	And you're in the following phase:	Then to meet compliance requirements:
Exercise or contingency operation at an overseas non-DoD installation	PREDEPLOYMENT	<ul style="list-style-type: none"> • Conduct environmental reviews in accordance with DoDD 6050.7 and host nation environmental requirements.
		<ul style="list-style-type: none"> • Check that no host nation environmental restrictions are required by SOFA or other international agreements.
		<ul style="list-style-type: none"> • Review the existing environmental plan or develop an environmental plan as mentioned at US DoD installations and it include as an appendix or annex in each OPLAN under which units will deploy.
	INITIAL BEDDOWN	<ul style="list-style-type: none"> • Comply with applicable host nation and DoD agreements
		<ul style="list-style-type: none"> • Work with the theater component.

Table 7.2. Contingency Environmental Compliance (Cont'd).

CONTINGENCY ENVIRONMENTAL COMPLIANCE		
If you're in:	And you're in the following phase:	Then to meet compliance requirements:
		<ul style="list-style-type: none"> • Revise or update environmental plan as needed. Forward proposed changes through the chain-of-command to the theater component. • Follow procedures for siting equipment and installing storage areas to ensure compliance with regulations.
Exercise or contingency operation at an overseas non-DoD installation (Con't)	SUSTAINMENT	<ul style="list-style-type: none"> • Adhere to established environmental procedures. • Obtain approval from the theater component for hazardous and solid waste disposal methods.
	REDEPLOYMENT	<ul style="list-style-type: none"> • Consult with the theater component for the proper procedures for cleanup and returning the area to the host nation.
		<ul style="list-style-type: none"> • Obtain approval from the theater component/ CE/DRMO for hazardous and solid waste disposal or abandonment requirements.

Table 7.2. Contingency Environmental Compliance (Cont'd).

CONTINGENCY ENVIRONMENTAL COMPLIANCE		
If you're in:	And you're in the following phase:	Then to meet compliance requirements:
Contingency situation with armed conflict or the threat of armed conflict at an overseas non-DoD installation	ANY OF THE PHASES	<ul style="list-style-type: none">• Make every effort to comply with environmental requirements. If deployment operations do not permit compliance, use common sense or consult the environmental function for purposes of requesting an Executive Emergency exemption..



8.0 ENVIRONMENTAL RISK-ASSESSMENT MATRICES

The environmental risk-assessment matrices are useful tools for identifying sensitive environmental areas and determining the environmental risk associated with planned activities (readiness exercises or deployment). Completion of the matrices facilitates compliance with USAF environmental policy by providing the risk-assessment information needed to avoid or minimize environmental impacts. This information includes identification of hazards, task analysis, and hazard control for contingency operations.

Our objective is full environmental compliance exercises and deployments. The degree of compliance with environmental standards achieved by USAF units during deployment is affected by the location, timelines, and activities performed. Also, environmental compliance may vary during the different phases of the deployment. However, the goal is always full compliance. Use the environmental matrices during each phase of a contingency operation to maximize environmental compliance:

- Predeployment - Identify environmental risks and the equipment needed to reduce risks.
- Initial Beddown - Evaluate existing environmental impacts and determine mitigation techniques.
- Sustainment - Achieve/maintain environmental compliance by identifying areas of deficiency when time is available to implement procedures and obtain equipment that minimizes environment impacts.
- Redeployment - Delineate responsibilities and procedures for disposal and site restoration.

The risk assessment matrices:

- Identify the hazards to the environment before the contingency operation. Environmental hazards are conditions that have the potential

for polluting the air, soil, water and/or degrading natural/cultural resources, or causing risk to human health.

- Assess the probability of risks to human health and the environment. The matrices provide a guide for weighing standard unit operations against the primary areas of concern.
- Aid in making decisions and developing measures to reduce risk.
- Assist briefing the chain-of-command (including the theater component and the environmental point of contact for the entire deploying force) and appropriate decision-makers on proposed plans and residual risk.
- Assist in the implementation of environmental measures by integrating them into plans, orders, SOPs, training performance standards, activities and rehearsals.
- Provide a guide for supervising and enforcing environmental standards.

8.1 ENVIRONMENTAL AREAS.

The environmental risk-assessment matrix consists of three parts: environmental areas, unit operations, and risk ratings. The matrices allow the user to assign a risk rating for various deploying force activities on each area listed below:

- Air pollution
- Water pollution
- Noise pollution
- Hazardous materials and hazardous waste
- Archeological and historic sites (cultural resources)
- Threatened and endangered species (natural resource)
- Wetland protection

8.2 SQUADRON OPERATIONS.

The activities listed below are typical bare-base type activities that should be assessed for impact on health and the environment.

- Site preparation (clear land, establish access to raw water, construct roads, establish drainage).
- Power production and electrical distribution.

- Water treatment and distribution (includes waste program).
- Facility construction.
- Aircraft maintenance/refueling.
- Vehicle maintenance.
- Other industrial operations.

These large scale activities should be assessed by the environmental contacts for the entire deploying force. Individual units should substitute their own types of activities, assess the impact of those activities, and determine how to mitigate potential damage. Each unit should consider the tasks they perform and assess the impacts. For instance, activities to assess may include cleaning up and disposing of spent rounds and disposal of gun cleaning oil.

8.3 RISK IMPACT VALUE.

The risk impact value represents an estimate of the conditions under which the unit will operate and is an indicator of the severity of environmental degradation. Table 8.1 uses a scale of 0 to 5, with 5 representing the greatest risk value. A similar table should be prepared for each of the seven environmental areas identified in table 8.8.

Table 8.1. Environmental Risk-Assessment Matrix.

<i>Environmental Areas</i>						Rating
Unit Operation	Risk Impact					
Site preparation	5	4	3	2	1	0
Power production and electrical distribution	5	4	3	2	1	0
Water treatment and distribution	5	4	3	2	1	0
Facility construction	5	4	3	2	1	0
Aircraft maintenance/refueling	5	4	3	2	1	0
Vehicle equipment maintenance	5	4	3	2	1	0
Other industrial operations	5	4	3	2	1	0

8.4 APPLICATION OF ENVIRONMENTAL RISK-ASSESSMENT MATRICES.

The following fictional scenario gives a practical application of the risk assessment matrix:

The 336th Bare Base Wing at Sweet Home AFB, Montana will conduct a wing-level training deployment to the Wildcatter Range in North Dakota. The site is well away from densely populated areas, but no-fly areas are clearly identified. The area has mountains, hills, wetlands, rivers, and streams. The exercise will last five days and involve normal day (12-16 hours a day) operations, with some night operations required. Forecasted weather will not adversely affect flying or maintenance operations.

Only minor maintenance will be done at the site. Mobility assets (tents and field utilities systems and a small vehicle package will be deployed. The experience of the unit's personnel is average. Environmental awareness is high, but proficiency may be low. For example, the response to hazardous material or waste spills has not been tested in over six months.

Based on the scenario, the unit commander or appropriate individual performs the following steps for assessing environmental impacts on planned activities.

Step 1. Identify the hazards to the environment prior to deployment. Possible hazards include degradation of wetlands, polluting streams and/or rivers, creating oil or fuel spills, and improperly handling hazardous materials and hazardous waste.

Step 2. Assess the probability of risks posed to human health and the environment using the environmental risk assessment matrices. Using the scenario above, determine (using common sense) a risk impact value for each of the operations in the areas of environmental concern. See annex D for a

list of factors that contribute to environmental risk. The numeric value does not have to include all contributing factors; it is a subjective, overall risk-impact value representing the worst-case situation. As shown in table 8.2, the potential risk of water pollution can be quantified for each activity. The rationale for the numbers highlighted in table 8.2 is explained below.

1. Site preparation involves several activities that could potentially result in water pollution. Since the unit will be moving into an area that has numerous water sources, there is an increased chance that spills and/or improper disposal of waste could affect surface waters. Therefore, a risk value of 5 is assigned for site preparation activities.
2. Power production and electrical distribution involves the installation of generators, cables, wires, and telephone lines. These activities should not have much of an impact on nearby water sources, however, there is some chance of a diesel oil spill when setting up generators or disturbance from burying power cables. The planners assign a risk value of 2 after assessing the potential threat to surface water.
3. Water treatment and distribution activities (which include waste disposal) are more likely to affect nearby water sources. Unit members will have to tap into the local water supply, existing wells, or other water sources to supply water for the squadron. The water must be analyzed, certified, and probably purified before use. Installation of purification systems, portable tanks or bladders, and a distribution and drainage system may have an impact on nearby rivers and streams. In particular, drainage and disposal of waste (gray water, solid waste, human waste, and hazardous waste) if improperly handled may adversely affect surface water in the area. Therefore, a risk impact value of 4 is assigned for water treatment and distribution.
4. Facility construction is assigned a 2 because minimal excavation of the area will occur, as short-term tents will be used for the most part.

5. Aircraft maintenance and refueling is assigned a risk value of 3 because only minor repair is planned and the risk of spills during refueling is low.
6. Vehicle equipment maintenance is assigned a risk value of 2 as a limited number of vehicles are being used in the exercise. Also, due to the short duration of the deployment, there will be very little vehicle maintenance. Spills from refueling and minor maintenance activities are a possibility.
7. Other industrial operations, those operations which are not listed in the other program areas, are not scheduled for the deployment and have been given a risk rating of 0.

Table 8.2. Water Pollution Example.

Water Pollution Example							
Environmental Area						Rating	
Water Pollution						18	
Squadron Operations	Risk Impact						
Site preparation	5	4	3	2	1	0	
Power production and electrical distribution	5	4	3	2	1	0	
Water treatment and distribution	5	4	3	2	1	0	
Facility construction	5	4	3	2	1	0	
Aircraft maintenance/refueling	5	4	3	2	1	0	
Vehicle equipment maintenance	5	4	3	2	1	0	
Other industrial operations	5	4	3	2	1	0	

The environmental risk assessment is repeated for each applicable environmental matrix. For illustrative purposes, assume the following values (ratings): air pollution, 5; noise pollution, 11; hazardous materials/hazardous waste, 7; cultural resources, 0; natural resources, 0; wetland protection, 15. These values are transcribed to the format in table 8.3.

Table 8.3. Overall Environmental Risk Assessment Format.

	Unit Operation							
	Site preparation	Power production and electrical distribution	Water treatment and distribution	Facility construction	Aircraft maintenance/refueling	Vehicle equipment maintenance	Other industrial operations	Risk rating
Air Pollution	1	2	0	0	1	1	0	5
Water Pollution	5	2	4	2	3	2	0	18
Noise Pollution	3	1	0	3	1	3	0	11
Hazardous Materials/Waste	1	1	2	1	1	1	0	7
Cultural Resources	0	0	0	0	0	0	0	0
Natural Resources	0	0	0	0	0	0	0	0
Wetland Protection	5	2	2	2	2	2	0	15
Overall Rating								56

Overall risks fall into one of four categories: low risk (0-60), medium risk (61-120), high risk (121-180), or extremely high risk (181-245). Table 8.4 displays risk categories.

Table 8.4. Risk Categories.

RISK CATEGORIES			
Category	Range	Environmental Damage	Decision Maker
Low	0-60	Little or none	Appropriate level
Medium	61-120	Minor	Appropriate level
High	121-180	Significant	Installation/Div.
Extremely high	181-245	Severe	MAJCOM

Step 3. Propose alternative plans or develop measures to reduce high risks. The overall environmental risk assessment for this scenario is 56, a low risk classification, as shown in table 8.4. Use of the matrices quickly identifies high risk operations by environmental area and type of activities. In the above example, water pollution and wetlands are high risk areas for site preparation activities. Now the unit commander can consider possible, practical, and effective measures to reduce those individual high-risk areas. Suggested actions to effectively manage contingency environmental issues include the following:

- Provide awareness training prior to deployment and continue training during initial beddown and sustainment.
- Improve and update the environmental plan throughout the initial beddown and sustainment phases of the contingency operation.
- Brief theater component/environmental flight and work cooperatively throughout the contingency operation.
- Determine requirements for each environmental program area, gather information, and monitor environmental issues.
- Follow proper treatment and disposal procedures for wastewater. Use existing systems when possible. Utilize stabilization lagoons or evaporation lagoons as required.
- Follow proper disposal procedures for solid waste (contract removal, bury, or burn).
- Follow hazardous materials/pollution prevention procedures. Do not take an excess of hazardous materials on the mission. Provide training for personnel handling hazardous wastes. Separate and label hazardous wastes; set up storage areas according to procedures. Maintain adequate documentation. Order equipment such as storage lockers and spill prevention systems as necessary and feasible. Build spill containment or berm storage areas.
- Ensure that adequate personal protective equipment and spill response resources are available. Order additional equipment during sustainment, if necessary.

Step 4. Brief the chain of command on proposed plans and potential risks as identified in the environmental risk-assessment matrices.

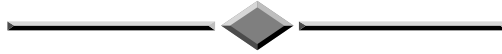
Step 5. Implement environmental measures by incorporating them into plans, orders, activities, training, and exercises.

Step 6. Supervise and enforce environmental standards.

See annex D for an generic risk-assessment matrix and information to help assign numeric risk impact values. To identify ways to minimize risks to human health and the environment posed by your operations, review the checklists in annex E.

Utilizing the risk assessment matrices, communicating with personnel, and understanding the applicable environmental requirements will reduce the risks to human health and the environment. It is paramount that all personnel strive to employ these lessons into their contingency activities.

EUGENE A. LUPIA, Maj General, USAF
The Civil Engineer



THIS PAGE IS INTENTIONALLY LEFT BLANK.



A
ANNEX

REFERENCES/ACRONYMS

REFERENCES

AFI 32-7001, *Environmental Budgeting*

AFI 32-7002, *Environmental Information Management System*

AFI 32-7006, *Environmental Program in Foreign Countries*

AFI 48-119, *Medical Service Environmental Quality Programs*

AFI 63-118, *Civil Engineer Research, Development, and Acquisition*

Cleanup

AFI 32-7020, *Environmental Restoration Program*

A

ANNEX



Compliance

AFI 32-1053, *Pest Management Program* (Formerly AFR 91-21)

AFI 32-4002, *Hazardous Material Emergency Planning and Response Compliance*, (Formerly AFR 19-8, AFR 355-1)

AFI 32-7040, *Air Quality Compliance*
(Formerly AFP 19-5)

AFI 32-7041, *Water Quality Compliance*
(Formerly AFP 19-5)

AFI 32-7042, *Solid and Hazardous Waste Compliance*
(Formerly AFP 19-5 and AFR 19-11)

AFI 32-7044, *Storage Tank Compliance*

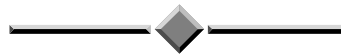
AFI 32-7045, *Environmental Compliance Assessment and Management Program* (Formerly AFR 19-16)

AFI 32-7047, *Compliance Tracking and Reporting*

AFI 32-7060, *Interagency Intergovernmental Coordination for Environmental Planning* (Formerly AFR 19-9)

A

ANNEX



AFI 32-7061, *Environmental Impact Analysis Process*
(Formerly AFR 86-4)

AFI 32-7063, *Air Installation Compatible Use Zone Program* (Formerly AFR 19-9)

AFI 32-7064, *Natural Resources Management*
(Formerly AFR 126-1)

AFI 32-7065, *Cultural Resources Management*
(Formerly AFR 126-7)

AFI 32-7066, *Environmental Baseline Surveys for Real Estate Transactions*

DODD 6050.7, *Environmental Effects Abroad of Major Department of Defense Action*

Pollution Prevention

AFI 32-7080, *Pollution Prevention Program*
(Formerly AFR 19-15)

A

ANNEX

**Acronym****Definition**

AFI	Air Force Instruction
AICUZ	Air Installation Compatible Use Zone
CFR	Code of Federal Regulations
CWA	Clean Water Act
DLA	Defense Logistics Agency
DoD	Department of Defense
DoT	Department of Transportation
DRMO	Defense Reutilization and Marketing Office
EA	Executive Agent
EIAP	Environmental Impact Analysis Program
EPA	Environmental Protection Agency
EPC	Environmental Protection Committee
EPCRA	Emergency Planning and Community Right-to-Know Act
FFCA	Federal Facilities Compliance Act
FGS	Final Governing Standards
HAZCOM	Hazards Communication
HAZMART	Hazardous Materials Pharmacy
HAZMAT	Hazardous Materials
HM	Hazardous Materials
HN	Host Nation
HW	Hazardous Waste
MAJCOM	Major Command
MOOTW	Military Operations Other Than War

A

ANNEX

Acronym**Definition**

MSDS	Material Safety Data Sheet
NEPA	National Environmental Policy Act
OEBGD	Overseas Environmental Baseline Guidance Document
OPLAN	Operation Plan
OSHA	Occupational Safety and Health Act
P2	Pollution Prevention
POL	Petroleum, Oils, and Lubricants
PPE	Personal Protective Equipment
RCRA	Resource Conservation and Recovery Act
SOFA	Status of Forces Agreement
SOP	Standard Operating Procedures
TSDFs	Treatment, Storage, and Disposal Facilities
UCMJ	Uniform Code of Military Justice
US	United States
USAF	US Air Force



THIS PAGE IS INTENTIONALLY LEFT BLANK.



B

ANNEX

ENVIRONMENTAL IMPACT ANALYSIS PROCESS (EIAP) FOR CONTINGENCY OPERATIONS

Exercise and contingency planners must analyze their proposed deployments for potential environmental impacts. As the proponent for the deployment, the exercise or contingency planner is responsible for the Environmental Impact Analysis Process (EIAP). Civil engineering can help determine which type of analysis is required, and can also assist in its preparation. However, be prepared to assist with information regarding the details of the proposed action. Actions which may apply within the US are listed in table B.1, EIAP Analyses.

Table B.1. EIAP Analysis.

Analysis	Description
Categorical Exclusion (CATEX)	Actions determined to cause no detrimental impacts on environment. AFI 32-7061, Attachment 2 lists specific actions receiving CATEX. Examples include: relocating a small number of aircraft; temporary increases in air operations, etc.

B

ANNEX



Table B.1. EIAP Analysis (Cont'd).

Analysis	Description
Environmental Assessment	Most common. Determines whether proposed deployment would result in significant impacts to the environment. Results in a Finding of No Significant Impact (FONSI), development of an Environmental Impact Statement, or modification of the proposed operation.
Environmental Impact Statement	Detailed analysis prepared if deployment poses significant impacts. Requires public meetings and comment periods and development of a Record of Decision.

A modified version of the EIAP applies for deployments to DOD and non-DOD installations outside the US. These actions are typically documented in one of the two types of analyses listed in table B.2.

B

ANNEX




Table B.2. EIAP Analyses in Foreign Countries.

Analysis	Description
Environmental Study	Prepared jointly by the US and one or more foreign nations. Includes a review of the affected environment, consideration of significant actions to avoid environmental harm or otherwise improve the environment, and the significant actions to avoid environmental considerations of other participating nations.
Environmental Review	An environmental review is prepared unilaterally by the US for actions that affect the environment of a nation not involved in the proposed action and includes a survey of the important issues. An environmental review is required only when the proposed action may significantly affect the environment of the host nation.

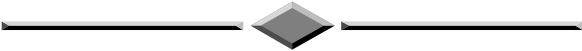
B

ANNEX



It is extremely important to coordinate contingency operations with the civil engineer as early as possible in the planning process. The EIAP is required by the National Environmental Policy Act (NEPA) under Federal Law.

Situations involving national security concerns or foreign governments that require prompt action will preclude full compliance with NEPA. In these situations, contact the deployed civil engineer as soon as possible to determine most suitable procedures. An exemption to the EIAP is authorized in the course of armed conflict, and the exemption applies as long as the armed conflict continues (Executive Order 12114).



ANNEX C

KEY LAWS**US Laws**

During training or contingency operations in the United States, its territories and possessions, the unit commander is responsible for complying with all Federal environmental laws including, but not limited to those outlined below.

National Environmental Policy Act (NEPA)

NEPA requires Federal officials to analyze potential environmental impacts of proposed actions and alternatives before making decisions. The law applies to all Air Force leaders and their activities. The NEPA requirements for deployed units are listed below:

- Identify areas of environmental concern;
- Identify mission-related environmental risks;
- Identify the potential effects of the proposed missions and operations on the environment;
- Discuss environmental risks in training meetings and briefings;
- Identify alternative training scenarios and techniques; and
- Consult installation environmental office personnel regarding requirements for NEPA documentation and coordination with the Federal and state environmental, natural resources, and historic preservation agencies.

ANNEX C



As a result of NEPA and the Environmental Impact Analysis Process, an environmental plan is required for deployments in the United States and to foreign countries. Prior to deploying, unit commanders should become familiar with all applicable environmental planning and reference documents. Additional information on the environmental planning required by NEPA is provided in Appendix B.

Executive Order (EO) 12856

EO 12856 requires all Federal agencies to comply with the Pollution Prevention Act of 1990 and the Emergency Planning and Community Right-to-Know Act (EPCRA), and to develop pollution prevention plans. It ensures that Federal facilities are responsible neighbors in the communities or foreign countries where they are located.

Resource Conservation and Recovery Act (RCRA)

RCRA establishes the framework for managing hazardous wastes. Its regulations set the standards for identifying, classifying, transporting, storing, treating, and disposing of hazardous and solid wastes and recycled used oils, and for the installation and operation of underground storage tanks (USTs) containing regulated substances. RCRA also requires that those involved in managing hazardous wastes be properly trained. Although the training outlines stateside requirements, it is also recommended for deployed units.

ANNEX C



The Federal Facility Compliance Act amended RCRA in 1992. It provides for a waiver of sovereign immunity that allows fines and penalties to be imposed for certain violations of RCRA, and further provides for criminal liability of federal employees under state solid and hazardous waste laws.

Clean Water Act (CWA)

The CWA affects surface water, groundwater, stormwater, wetlands and coastal water areas protection, and erosion control. The CWA seeks to restore and maintain the chemical, physical, and biological integrity of the United States (US) navigable waterways. It also establishes requirements for reporting oil and hazardous substances spills into waterways and their tributaries.

National Historic Preservation Act (NHPA)

The purpose of NHPA is to help safeguard against the loss of irreplaceable historic, archeological, and cultural properties, especially on Federal lands.

Endangered Species Act (ESA)

ESA prohibits actions that harm Federally listed, threatened, or endangered plant or animal species.

Occupational Safety and Health Act (OSHA)

This act enables the Department of Labor to establish standards for management and use of hazardous materials in the workplace. It requires chemical

ANNEX C



manufacturers to develop a material safety data sheet (MSDS) for every hazardous chemical produced. A MSDS outlines important storage, use and emergency response requirements for the workers using the hazardous material and helps protect worker health and safety. OSHA also requires that all workers who handle hazardous materials, and their supervisors, receive hazardous communication (HAZCOM) training.

The Clean Air Act (CAA)

The CAA regulates all new and existing sources of air pollution to certain ambient air quality standards, through source-specific emission limits contained in state implementation plans, for sources such as, smokestacks, incinerators, vehicles, generators, etc. These sources are subject to control technology and permitting requirements. The CAA also regulates emission limits for specific types of air pollutants.

The Safe Drinking Water Act (SDWA)

The SDWA requires EPA to set national drinking water standards that must be met by persons and facilities that deliver water to the tap. The SDWA also outlines standards that attempt to prevent contamination of groundwater by regulating underground injection of liquid wastes, and requiring states to implement wellhead protection programs.

ANNEX C



Executive Order (EO) 11990

EO 11990 instructs each Federal agency to avoid new construction in wetlands unless there is no practicable alternative. This EO goes beyond the requirements of the Clean Water Act, under which construction in wetlands is allowed, but only after a permit is issued by the Corps of Engineers.

The National Contingency Plan (NCP)

The NCP governs oil and petroleum substance spills.

Superfund Amendments and Authorization Act (SARA)

The SARA pertains to emergency planning and community right-to-know laws.

Federal Insecticide, Fungicide and Rodenticide Act (FIFRA)

The FIFRA governs pesticides and herbicides.

ANNEX C




Overseas Policies and Guidance

The Overseas Environmental Baseline Guidance Document (OEBGD) does not apply to deployments. It does however, outline requirements for environmental compliance for all overseas DoD installations. In some situations, the OEBGD may be the most reliable environmental planning tool that is available. DoD also develops Final Governing Standards, as stated in paragraph 2.4.

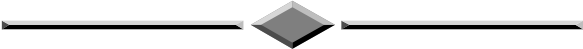
When deploying, the guidelines are more fluid and less defined. All deployments should follow the environmental requirements outlined in the OPLAN. This section should identify the necessary resources and assign specific responsibilities to comply with applicable environmental requirements.

Sometimes, situations involving national security concerns or foreign governments require prompt action that would preclude full compliance with environmental regulations. The unit commander should consult with the deployed civil engineer, the installation environmental flight, or the theater component in these situations to clarify environmental issues. When in doubt about environmental responsibilities, always contact your assigned headquarters.

ANNEX C



There may be a contrast in the requirements for deployments to an overseas DoD installation, such as a USAFE installation, versus deployments to an overseas non-DoD installation. Generally, deployments to areas within USAFE will have more stringent environmental requirements than deployments to areas like Somalia or Haiti. All requirements will be driven by the environmental annex to the OPLAN, as required by JCS Publication 4-04. In all situations overseas where compliance standards are likely to be less stringent than in the US, use common sense to minimize risks to human health and the environment.



ANNEX D

ENVIRONMENTAL RISK ASSESSMENT MATRICES

The environmental risk-assessment matrices are practical decision-making tools for those with the appropriate knowledge and decision-making authority. The contributing factors listed below are designed to help the unit commander or environmental coordinator identify the hazards and environmental risks associated with contingency operations. Contributing factors can be changed or modified as necessary to place them in perspective to unit operations. If no risk is posed, then enter a zero into the corresponding category.

Table D.1. Hazardous Materials and Hazardous Waste
Probability of Occurrence Matrix.

Value	Contributing Factors
5	<ul style="list-style-type: none"> • Low-visibility, night, or sustained high-tempo operations are planned. • Operations are planned close to surface water sources. • Current or forecasted weather conditions are harsh. • Personnel's experience with responding to HM or HW spills is limited or untested. • Command and control or supervision is marginal. • Unit members generally consider environmental matters a nuisance.

ANNEX D

Table D.1. Hazardous Materials and Hazardous Waste
Probability of Occurrence Matrix (Cont'd).

Value	Contributing Factors
4	<ul style="list-style-type: none"> • Some high-tempo operations are planned. • Operations close to water sources are planned. • Current or forecasted weather conditions are marginal. • Some individuals are HM/HW qualified.
3	<ul style="list-style-type: none"> • Unit members are environmentally conscientious but not trained. • Key HM/HW personnel are available during operations and maintenance activities. • Adequate spill cleanup materials are available. • Command and control or supervision is adequate. • Current or forecasted weather conditions are not a factor. • Operations tempo is normal.

ANNEX D



Table D.1. Hazardous Materials and Hazardous Waste
Probability of Occurrence Matrix (Cont'd).

Value	Contributing Factors
2	<ul style="list-style-type: none"> • Normal operations are planned (airmen have adequate rest). • Key HM/HW individuals will oversee high-risk HM/HW operations and maintenance activities. • AF personnel are environmentally sensitive and HM/HW trained. • Current or forecasted weather conditions are not a factor. • Command and control or supervision is excellent.
1	<ul style="list-style-type: none"> • AF personnel dealing with HM/HW are well trained and experienced. • Spill response team is well trained and has successfully conducted a HM/HW spill drill within preceding six months. • Unit HM/HW SOP is current (has adequate HM/HW inventory and location of HM/HW identified), and fire department is provided with this inventory and the location. • Command and control or supervision is excellent.

D

ANNEX



Table D.1. Hazardous Materials and Hazardous Waste Probability of Occurrence Matrix (Cont'd).

Value	Contributing Factors
1	<ul style="list-style-type: none">• HM/HW is transported according to local/installation procedures.• Tempo of operations, training, and maintenance is normal.• AF personnel support the recycling program.• Work areas are well maintained, and unit maintains good housekeeping practices.
0	<ul style="list-style-type: none">• No impact.

ANNEX D



Table D.2. Water Pollution Probability of Occurrence Matrix.

Value	Contributing Factors
5	<ul style="list-style-type: none"> • Current or forecasted weather conditions will cause much terrain damage. • Potential spills most likely will affect groundwater or surface waters (including wetlands, streams, ditches, sewers, or drains). • Night or low-visibility operations are planned. • Personnel's environmental proficiency is low. • Command and control or supervision is marginal. • Sustained high-tempo operations (36 hours plus) are planned. • Spill response is marginal or untested. • Spill-response equipment is not available.
4	<ul style="list-style-type: none"> • Current or forecasted weather conditions will cause some terrain damage. • Potential for ground spill is 25+ gallons, and will not affect surface waters, groundwater, wetlands, streams, ditches, sewers, or drains. • High-tempo operations (up to 36 hours) are planned. • AF personnel proficiency is somewhat low. • Command and control or supervision is marginal

ANNEX D



Table D.2. Water Pollution Probability of Occurrence Matrix (Cont'd).

Value	Contributing Factors
3	<ul style="list-style-type: none"> • Potential for ground spill is less than 25 gallons, with no possibility of contaminating any water source. • Normal operations (12 to 16 hours a day) are planned. • Unit members are environmentally sensitive. • Command and control or supervision is adequate. • Weather will not adversely affect operations
2	<ul style="list-style-type: none"> • Potential ground spill is minor (less than one gallon), with no possibility of contaminating any water source. • Normal operations (12-16 hours a day) are planned. • Unit members are environmentally sensitive. • Command and control or supervision is good. • AF personnel are trained in spill response duties. • Spill response equipment is readily available.

ANNEX D



Table D.2. Water Pollution Probability of Occurrence Matrix (Cont'd).

Value	Contributing Factors
1	<ul style="list-style-type: none"> • No potential for spill. • Personnel proficiency is high. • Unit members are very environmentally sensitive. • Command and control or supervision is high/tested. • Unit members maintain good housekeeping practices. • Equipment is well maintained. • Collection of maintenance wastes are managed properly.
0	<ul style="list-style-type: none"> • No impact.

D

ANNEX



Table D.3. Air Pollution Probability of Occurrence Matrix.

Value	Contributing Factors
5	<ul style="list-style-type: none"> • Current or forecasted weather conditions will contribute to range fires (dry and windy conditions). • Operating area is susceptible to range fires. • Vehicles and equipment are not reliable and well maintained. • AF personnel have not received awareness training. • Squadron members are not proficient/experienced in spill response. • Command and control or supervision is marginal. • Sustained high-tempo operations are planned. • Extensive use of explosives is planned.
4	<ul style="list-style-type: none"> • Operating area is susceptible to range fires. • Current or forecasted weather conditions could contribute to range fires. • AF personnel have not received awareness training. • Some high-tempo operations are planned. • Some use of explosives is planned.

ANNEX D



Table D.3. Air Pollution Probability of Occurrence Matrix (Cont'd).

Value	Contributing Factors
3	<ul style="list-style-type: none"> • Weather is favorable to training; winds and range conditions are within safe operating limits. • Operating area is safe from range fires. • Personnel are briefed on hazards of range fires and fire restrictions. • Command and control or supervision is adequate.
2	<ul style="list-style-type: none"> • Operating area is safe from range fires. • Standby fire-fighting equipment is available. • AF personnel are environmentally conscientious. • Unit members are briefed on hazards of range fires and fire restrictions. • Command and control or supervision is good.
1	<ul style="list-style-type: none"> • Operating areas are not susceptible to range fires.

D

ANNEX



Table D.3. Water Pollution Probability of Occurrence Matrix (Cont'd).

Value	Contributing Factors
1	<ul style="list-style-type: none"> • Squadron members are environmentally conscientious. Fires are limited, controlled, and allowed only in authorized areas (powder burn areas and incinerators). • Use and training with CS (riot-control chemical agent) and smoke are strictly controlled. • Vehicles and equipment are well maintained and in good operating order. • AF personnel are thoroughly familiar with range fire restrictions. • Command and control or supervision is excellent.
0	<ul style="list-style-type: none"> • No impact.

ANNEX D



Table D.4. Natural Resources Probability of Occurrence Matrix.

Value	Contributing Factors
5	<ul style="list-style-type: none"> Threatened and endangered species habitats are not identified. Threatened and endangered species habitats are not marked off as a restricted area. Command and control or supervision is marginal. Low-visibility or night operations are planned. Sustained high-tempo operations are planned. Participants are not familiar with the terrain.
4	<ul style="list-style-type: none"> Threatened and endangered species habitats are marked off. Low-visibility or night operations are planned. Command and control or supervision is adequate. Participants are not familiar with the terrain.

ANNEX D



Table D.4. Natural Resources Probability of Occurrence Matrix (Cont'd).

Value	Contributing Factors
3	<ul style="list-style-type: none">• Threatened and endangered species habitats are marked off.• AF personnel are briefed on threatened and endangered species.• Low-visibility or night operations are not planned• Command and control or supervision is adequate.
2	<ul style="list-style-type: none">• Threatened and endangered species habitats are identified.• Threatened and endangered species habitats are marked off.• Low-visibility or night operations are not planned.• Command and control or supervision is good.• Participants are familiar with the terrain.

D

ANNEX



Table D.4. Natural Resources Probability of Occurrence Matrix (Cont'd).

Value	Contributing Factors
1	<ul style="list-style-type: none">• Threatened and endangered species habitats are identified• Airmen know and recognize threatened and endangered species.• Threatened and endangered species habitats are marked off as restricted/"off limits" areas.• Unit members avoid threatened and endangered species habitats during training, operations, and logistics activities.• Unit members are thoroughly familiar with the terrain.
0	<ul style="list-style-type: none">• No impact.

ANNEX D



Table D.5. Cultural Resources Probability of Occurrence Matrix.

Value	Contributing Factors
5	<ul style="list-style-type: none"> • Low-visibility, night, or sustained high-tempo operations are planned. • Terrain has many archeological or historic sites. • Sites are neither identified nor marked off as restricted areas. • Command and control or supervision is marginal. • Unit members are not familiar with the terrain.
4	<ul style="list-style-type: none"> • Terrain has some archeological or historic sites. • Archeological and historic sites are marked off. • Low-visibility or night operations are planned. • Command and control or supervision is adequate. • AF personnel are not familiar with the terrain.

ANNEX D



Table D.5. Cultural Resources Probability of Occurrence Matrix (Cont'd).

Value	Contributing Factors
3	<ul style="list-style-type: none"> • Archeological and historic sites are marked off. • Unit members have been briefed on sites in operating areas. • No low-visibility night operations are planned. • Command and control or supervision is adequate.
2	<ul style="list-style-type: none"> • Archeological and historic sites are identified and marked off. • No low-visibility night operations are planned. • Command and control or supervision is good. • Unit members are familiar with the terrain.
1	<ul style="list-style-type: none"> • Archeological and historic sites are identified and marked off. • Airmen avoid sites during training, operations, and logistics activities.

ANNEX D



Table D.5. Cultural Resources Probability of Occurrence Matrix (Cont'd).

Value	Contributing Factors
	<ul style="list-style-type: none"> • AF personnel are proactive in recognizing, safeguarding, and reporting signs or evidence of possible archeological artifacts or sites. • Command and control or supervision is effective. • Unit members are thoroughly familiar with the terrain. • Current or forecasted weather conditions are not an adverse factor.
0	<ul style="list-style-type: none"> • No impact.

ANNEX D



Table D.6. Wetland Protection Probability of Occurrence Matrix.

Value	Contributing Factors
5	<ul style="list-style-type: none"> • Sustained high-tempo operations are planned. • Command and control or supervision is marginal. • Wetland boundaries are not marked or understood. • AF personnel have not received awareness training. • Personnel spill response and waste handling proficiency is marginal or untested. • Equipment is unreliable or untested. • Field service/maintenance may have to be done near wetlands. • Spill-response material is not available.
4	<ul style="list-style-type: none"> • Wetland boundaries are marked. • Low-visibility or night operations are planned. • Command and control or supervision is adequate. • Unit members are not familiar with the terrain. • AF personnel have not received awareness training.

ANNEX D



Table D.6. Wetland Protection Probability of Occurrence Matrix (Cont'd).

Value	Contributing Factors
4	<ul style="list-style-type: none"> Field service/maintenance may have to be done near wetlands.
3	<ul style="list-style-type: none"> Wetland area is well defined and marked. AF personnel have been briefed on susceptibility of wetlands to damage by operations, training, and logistics activities. No low-visibility or night operations are planned. Command and control or supervision is adequate.
2	<ul style="list-style-type: none"> Wetland area and boundaries are well defined. AF personnel have received awareness training. No low visibility or night operations are planned. Command and control or supervision is good. Unit members are familiar with the terrain.
1	<ul style="list-style-type: none"> Maintenance is conducted in approved areas. Wetland areas and boundaries are identified.

ANNEX D



Table D.6. Wetland Protection Probability of Occurrence Matrix (Cont'd).

Value	Contributing Factors
1	<ul style="list-style-type: none"> • No refueling will be conducted in wetland areas. • Streams/ditches will be crossed at designated vehicle crossings. • Command and control or supervision is excellent. AF personnel have received awareness training. • Unit members are familiar with the terrain. • Applicable permits for activities impacting wetlands have been obtained. • Collection of maintenance wastes are managed properly.
0	<ul style="list-style-type: none"> • No impact.

ANNEX D



Table D.7. Noise Protection Probability of Occurrence Matrix.

Value	Contributing Factors
5	<ul style="list-style-type: none"> • Sustained high-tempo operations are planned, with much noise-generating equipment and activities (artillery, tracked vehicles, marksmanship). • Activities are located close to civilian populace. • Command and control or supervision is marginal. • Personnel proficiency is marginal. • Unit members have not received awareness training. • Extensive night maneuvers are planned.
4	<ul style="list-style-type: none"> • High-tempo operations are planned with some noise-generating activities. • A large number of engine starts and run-ups are required. • Command and control or supervision is adequate. • Activities are located near civilian populace. • AF personnel have not received awareness training.. • Limited night maneuvers are planned.

D

ANNEX

Table D.7. Noise Protection Probability of Occurrence Matrix (Cont'd).

Value	Contributing Factors
3	<ul style="list-style-type: none">• Level of noise-generating equipment is normal.• Civilian populace will be nominally affected.• Command and control or supervision is good.• Night maneuvers may be conducted.
2	<ul style="list-style-type: none">• Nominal noise levels are generated.• Command and control or supervision is good.• AF personnel are environmentally conscientious.• Night maneuvers are not likely.

ANNEX D



Table D.7. Noise Protection Probability of Occurrence Matrix (Cont'd).

Value	Contributing Factors
3	<ul style="list-style-type: none">• Level of noise-generating equipment is normal.• Civilian populace will be nominally affected.• Command and control or supervision is good.• Night maneuvers may be conducted.
2	<ul style="list-style-type: none">• Nominal noise levels are generated.• Command and control or supervision is good.• AF personnel are environmentally conscientious.• Night maneuvers are not likely.

ANNEX D



Table D.7. Noise Protection Probability of Occurrence Matrix (Cont'd).

Value	Contributing Factors
1	<ul style="list-style-type: none"> • Unit members are aware of and comply with noise-restrictions hours. • Command and control or supervision is highly effective. • Activities are located away from the civilian populace. • No night maneuvers are planned. • Minimum operations, training, or maintenance activities are planned.
0	<ul style="list-style-type: none"> • No impact.

ANNEX D



ENVIRONMENTAL RISK-ASSESSMENT WORKSHEET

Environmental Area				Rating			
Unit Operation	Risk Impact						
Site preparation	5	4	3	2	1	0	
Power production and electrical distribution	5	4	3	2	1	0	
Water treatment and distribution	5	4	3	2	1	0	
Facility construction	5	4	3	2	1	0	
Aircraft maintenance/refueling	5	4	3	2	1	0	
Vehicle Equipment Maintenance	5	4	3	2	1	0	
Other Industrial Operations	5	4	3	2	1	0	

ANNEX III

**MINIMIZING RISKS DURING
CONTINGENCY OPERATIONS**

Utilize the following checklists to identify areas which can be improved to increase the unit's environmental compliance. The section consists of 3 tables, Checklist of Actions before Contingency Operations, Checklist of Actions during Contingency Operations, and Checklist of Actions after Contingency Operations.

Checklist of Actions before Contingency Operations

- Are environmental standards part of training conditions and standards?
- Are leaders including the environment in the training planning process?
- Have the forecasted weather conditions been considered during planning?
- Has the chain of command been briefed on the training exercise plan?
- Has an AF Form 813 been completed and approved (National Security may supersede this action)?

ANNEX E



Checklist of Actions before Contingency Operations (Con't)

Area of Operation

- Has range clearance been obtained?
- Have special land use permits been obtained?
- Have areas of environmental concern been verified during site reconnaissance?
- Has beddown area been fully photographed to identify sensitive environment?

Personnel Preparation

- Has the unit appointed an environmental coordinator?
- Do personnel understand their responsibilities in reducing generation of hazardous waste and minimizing harm to the environment?
- Have personnel been briefed on hazardous materials management, flora and fauna protection, archeological and historical preservation, and other sensitive environmental resources?
- Are environmental and health risks discussed in contingency operation meetings?
- Are transporters of hazardous waste trained according to Department of Transportation (DOT) HM 181 and 126F?

ANNEX E**Checklist of Actions before Contingency Operations
(Con't)****Operations Preparations**

- Has an environmental risk assessment been performed?
- Are rehearsals conducted to ensure that all safety and environmental considerations are satisfied?
- Have proper labeling and placarding procedures been followed for transportation of hazardous materials?
- Have provisions been made for handling medical, human, and solid wastes?
- Has proper personal protective equipment (PPE) been provided for handling hazardous materials?
- Has the environmental plan been written?
- Are the necessary tools and equipment available for spill response?
- Is the spill response team properly trained?
- Are unit personnel knowledgeable of off limit areas?
- Do you have approval for installation layout and usage?
- Has the chain of command been briefed on actions which may affect sensitive environments?

ANNEX E



**Checklist of Actions before Contingency Operations
(Con't)**

Noise

- Are hazardous noise areas clearly marked?
- Are engine run-ups being held to a minimum?
- Are units complying with noise abatement hours?

Vehicle Movement Damage

- Are vehicles being driven on secondary roads to minimize on-road damage?
- When vehicles are driven off roads do they remain on marked trails?
- Are vehicles being driven carefully in wooded areas to minimize damage to vegetation?
- Are ditches and streams being crossed only at approved crossings?



Checklist of Actions before Contingency Operations (Con't)

Wetlands

- Have permits been obtained for operations in wetland areas?
- Are sensitive wetland areas designated and clearly marked?
- Is the use of vehicles in wetland areas being kept at a minimum?
- Are units avoiding discharge of wastewater into wetland areas or waterways?
- Are refueling operations taking place away from wetland areas and waterways?
- Are units avoiding filling in of wetland areas, when possible?

Endangered Species

- Have any present endangered species or sensitive habitat areas been identified to personnel, and personnel instructed on how to avoid impacts to them?
- Are sensitive areas designated and clearly marked?

Cultural Resources

- Are cultural sites designated and clearly marked?

ANNEX E



Checklist of Actions before Contingency Operations (Con't)

- Are units instructed not to modify structures or dig in these areas?
- Are personnel instructed to immediately report the discovery of artifacts?

Camouflage

- Are units using camouflage nets whenever possible instead of live vegetation?
- Are units ensuring that ground cover is not stripped bare of vegetation?

Waste Disposal

- Are units establishing collection points for proper trash disposal?
- Is each unit policing its own area?
- Are kitchen wastes being disposed of properly?
- Are medical and human wastes being disposed in an approved manner?
- Are gray water disposal policies being followed?

ANNEX E

**Checklist of Actions before Contingency Operations
(Con't)****Hazardous Material and Waste Handling**

- Are personnel complying with the turn-in and disposal procedures in the environmental plan?
- Are units minimizing the use of hazardous materials?
- Are units placing hazardous waste and POL waste products in separate containers?
- Are units delivering hazardous waste and POL waste products to a designated waste collection point?
- Are units ensuring that POL and vehicle maintenance waste products are not dumped into sewers, ditches, or streams?
- Are spill teams designated and trained?
- Is spill response equipment available?
- Are spill teams trained on fire/explosion procedures?
- Are spill teams trained in emergency first aid?
- Are spills being reported as required by local regulations?

ANNEX E



Checklist of Actions during Contingency Operations

- Is awareness instruction being performed concurrently with sustainment?
- Have personnel and equipment needed to improve environmental compliance been identified?
- Has an environmental risk assessment been performed?
- Are environmental and health risks discussed in contingency operation meetings?
- Have steps been taken to minimize any impacts to human health and the environment?
- Are new troops briefed on environmental management procedures and duties upon arrival?
- Do personnel understand their responsibilities in reducing generation of hazardous waste and minimizing harm to the environment?
- Has the environmental plan been written?

ANNEX E

**Checklist of Actions during Contingency Operations
(Cont'd)****Wetlands and Water Resources**

- Are units ensuring that POL and vehicle maintenance waste products are not dumped into sewers, ditches, or streams?
- Is the use of vehicles in wetland areas being kept at a minimum?
- Are units avoiding discharge of wastewater into wetland areas or waterways?
- Are refueling operations taking place away from wetland areas and waterways?
- Are units avoiding filling in of wetland areas, when possible?

Waste Disposal and Hazardous Materials Management

- Are units establishing collection points for proper trash disposal?
- Is each unit policing its own area?
- Are kitchen wastes being disposed of properly?
- Are medical and human wastes and gray water being disposed in an approved manner?
- Are personnel complying with the turn-in and disposal procedures in the environmental plan?

ANNEX E**Checklist of Actions during Contingency Operations
(Cont'd)**

- Are units minimizing the use of hazardous materials?
- Are units placing hazardous waste and POL waste products in separate containers?
- Are vehicles being refueled only at designated locations?
- Are POL drip pans or other secondary containment utilities being used?
- Are POL-absorbing compounds present during fueling operations?

Vehicle Movement

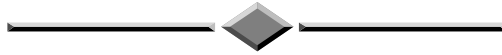
- Have proper labeling and placarding procedures been followed for transportation of hazardous materials?
- Are vehicles being driven on secondary roads to minimize on-road damage?
- When vehicles are driven off roads do they remain on marked trails?
- Are vehicles being driven carefully in wooded areas to minimize damage to vegetation?
- Are ditches and streams being crossed only at approved crossings?
-

ANNEX E



Checklist of Actions after Contingency Operations

- Is all waste and rubbish being collected and prepared for disposal?
- Are all hazardous materials and hazardous waste prepared for transportation (either to a host nation contractor, disposal site or to DLA/DRMO)?
- Have unexploded munitions been marked and reported?
- Are reusable materials, such as fuel, communications wire, tires, etc. being loaded for redeployment rather than unnecessary disposal?
- Have any items been identified that can be implemented to improve environmental stewardship in future contingency operations?
- Have photos been taken of the landfill, latrine, and hazardous waste areas? Have these areas been properly marked?
- Have you cleaned and restored the site to the required standards as defined by the authorities having jurisdiction?



THIS PAGE IS INTENTIONALLY LEFT BLANK.



F
ANNEX**ORGANIZATIONAL
RESPONSIBILITIES**

Each organization must perform its tasks so as to reduce or eliminate impacts on human health and the environment. Deployed functions have the same environmental duties and responsibilities they have at their home station.

Wing

The Wing has the overall responsibility for management for environmental issues through the Civil Engineer

Environmental Protection Committee (EPC)

The EPC advises the installation commander on environmental issues and assists in formulating environmental policy on DoD installations.

Safety

Safety provides technical assistance to ensure air and ground safety standards and requirements in all contingency operations.

Judge Advocate

The Judge Advocate will assist the installation coordinator in determining compliance with US or host nation laws in contingency operations.

F

ANNEX



Public Affairs

The Public Affairs Office will assist the installation coordinator in achieving a positive relationship with the surrounding community and ensure compliance with any community relations requirements of US or host nation laws.

Support Group

The Support Group will be responsible for environmental issues involved with facility construction, modification, maintenance, and civil engineer operations, such as drinking and wastewater systems, and waste management operations. Each Support Group must identify and implement practices that reduce adverse impacts on human health and the environment.

Civil Engineer

The Civil Engineer serves as the focal point for environmental issues. As such, the civil engineer unit will be responsible for environmental issues involved in the following areas:

- Determining the layout of the installation including functional groups, utilities, and waste management procedures in consultation with medical (Public Health);
- Airfield clearance zones and revetments;

F

ANNEX



- Roads and access ways;
- Cut and fill operations; and
- Installation and bare base construction in consultation with medical (Public Health).

Questions regarding the potential impacts of these activities on the environment should be directed to the environmental point of contact of the Civil Engineer Unit.

Logistics Group

The Logistics Group will be responsible for environmental issues involved with supply, transportation, and maintenance. Each logistics group function must identify and implement practices that reduce adverse impacts on human health and the environment.

Supply

Supply will operate all receiving and supply points on the installation. Logistics/Supply will be coordinated with when requesting additional materials to promote environmental compliance (additional storage drums, portable containment, etc.). As the central supply and distribution point for all hazardous materials, Logistics/Supply shall ensure that distribution of any hazardous material is accompanied by a MSDS.

F

ANNEX

Transportation

Transportation will control the movement of assets on and off the installation and perform vehicle maintenance activities. This includes hazardous materials and hazardous waste. Information regarding packaging and shipping hazardous materials or hazardous and solid waste should be directed to the environmental point of contact of the Logistics Group. Transportation can also provide vehicular support for transport within the base.

Aircraft Maintenance

Aircraft maintenance will be in charge of maintenance performed on vehicles and equipment. The environmental point of contact for the logistics group will have useful information on the pollution prevention efforts for used motor oils and antifreeze and other hazardous materials used during normal operations. Aircraft maintenance will be responsible for properly segregating and labeling their hazardous waste for disposal.

Questions regarding the potential impacts of these activities on the environment should be directed to the environmental point of contact of the Logistics Group.

F

ANNEX

Operations Group

The Operations Group is responsible for mobilization planning. Operations will be responsible for preparing the Environmental, Safety and Occupational Health Plan for proposed contingency actions. Operations will also be responsible for proper management of their hazardous materials and wastes, generated during light maintenance and other operations. Aircrews responsible for transporting hazardous material/hazardous waste should ensure it is properly marked.

Medical Group

The Medical Group will be in charge of monitoring and maintaining human health on the base, and will manage biomedical hazardous materials and wastes by incineration, landfill, or contracting it out locally. The first two options are coordinated with the Civil Engineer Unit.

Bioenvironmental Engineering

The bioenvironmental engineering ensures the health of Air Force workers in operational, industrial, and community environments to enable commanders to execute the mission. Activities include workplace industrial hygiene evaluations (hazardous material).

F

ANNEX

noise, ventilation, radiation, etc.), environmental monitoring and health risk assessment, drinking water surveillance, and contingency response.

Public Health

Public health recommends preventative strategies to reduce disease, disability, and death. Deployment activities include consultation on site selection and sanitary device placement, field sanitation and hygiene, food and public facility sanitation, disease surveillance, and patient decontamination.

Defense Reutilization and Marketing Office (DRMO)

If DRMO is in theater, they will obtain contracts with the host nation contractors for disposal of hazardous waste and will also collect recyclable material. The DRMO will also ensure waste, which must be retrograded back to US, is properly transported to a facility which has a written agreement to accept the waste. If DRMO is not in theater, they may be contacted for technical support and these functions will be accomplished by in-place contracting, engineering, or logistical personnel.

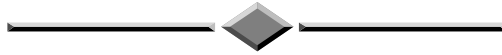
F

ANNEX



Other US Units

Other US units have the responsibility of adhering to Air Force and host nation environmental regulations. In addition, tenant unit personnel participating in the contingency operation should be included in the environmental awareness training before and during the operation.



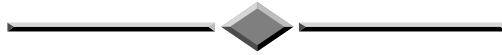
THIS PAGE IS INTENTIONALLY LEFT BLANK.



G
ANNEX**ENVIRONMENTAL CONTACTS
FOR DEPLOYING UNITS**

The following Air Force theater components can assist in providing theater and location specific guidance and policies during all stages of an overseas contingency operation. These contacts are particularly helpful for deployments to non-DoD installations in areas where the applicability of various environmental requirements is in question and local operating standards are unknown.

Southwest Asia	CENTAF Civil Engineer DSN 965-3249
South America & Central America	SOUTHAF Civil Engineer DSN 361-4553
European Theater	USAFE Civil Engineer DSN 480-7768/6726
Pacific Theater	PACAF Civil Engineer DSN 448-0476
Atlantic Command (ACOM)	ACOM Civil Engineer DSN 836-5922/7/5



THIS PAGE IS INTENTIONALLY LEFT BLANK.



**I
ANNEX****INDEX****—A—**

Air Force Instructions (AFI), 6, 14, 37, 38, 66, 94, 129, 130, 131, 132
Air Installation Compatible Use Zone (AICUZ), 33, 132
air pollution, 21, 31, 42, 48, 52, 58, 70, 76, 80, 86, 98, 103, 107, 113, 118, 123, 124, 142, 152, 153

—C—

Categorical Exclusion (CATEX), 135
Clean Air Act (CAA), 142
Clean Water Act (CWA), 15, 141
Code of Federal Regulations (CFR), 24, 57, 84
cultural resources, 8, 10, 13, 21, 22, 31, 43, 48, 52, 57, 71, 76, 80, 85, 86, 98, 103, 107, 111, 113, 123, 124

—D—

Defense Reutilization and Marketing Office (DRMO), 26, 27, 37, 40, 55, 57, 58, 69, 73, 78, 79, 83, 84, 85, 86, 96, 97, 104, 106, 109, 110, 111, 112, 115, 132, 188
DoT label, 26, 56, 57, 85, 110, 111, 171

I

ANNEX



—E—

Emergency Planning and Community Right-to-Know Act (EPCRA), 140

endangered species, 48, 76, 118, 155, 156, 173

Endangered Species Act (ESA), 141

environmental damage, 9, 19, 88

environmental flight, 9, 14, 20, 22, 23, 24, 25, 26, 28, 31, 33, 37, 39, 40, 45, 46, 47, 48, 49, 53, 54, 55, 56, 57, 58, 60, 63, 68, 74, 75, 81, 83, 84, 87, 88, 89, 101, 114, 125, 143

Environmental Impact Analysis Process (EIAP), 6, 22, 37, 38, 39, 60, 65, 66, 67, 90, 96, 132, 135, 136, 138

environmental laws, 6, 13, 14, 15, 35, 37, 39, 88, 139, 140

environmental poc, 46, 74, 101, 185, 186, 187

Environmental Protection Agency (EPA), 13, 44, 54, 55, 56, 82, 99, 109, 142

environmental regulations, 14, 45, 55, 62, 73, 83, 89, 93, 100, 109, 143, 189

environmental stewardship, 9, 11, 19, 21, 23, 39, 45, 49, 63, 67, 73, 74, 77, 91, 92, 93, 95, 100, 177

erosion, 31, 141

erosion control, 141

Executive Order (EO), 66, 94, 138, 141

ANNEX H



—F—

Final Governing Standards (FGS), 13, 17, 65, 93, 143
fire department, 22, 30, 42, 51, 52, 61, 70, 79, 80, 98, 105,
106, 146

—G—

gray water, 28, 38, 41, 66, 69, 71, 97, 99, 122, 174

—H—

hazard communications (HAZCOM), 22, 26, 39, 67, 96, 142
hazardous material (HM), 5, 10, 15, 19, 21, 22, 26, 27, 28, 30,
31, 32, 38, 40, 41, 43, 46, 50, 51, 54, 55, 56, 57, 58, 59, 61,
66, 68, 71, 74, 78, 79, 82, 84, 85, 87, 93, 96, 98, 101, 105,
109, 110, 111, 112, 113, 120, 123, 125, 141, 170, 175, 176,
178, 179
hazardous waste (HW), 5, 9, 10, 16, 19, 21, 22, 24, 25, 26, 27,
30, 32, 37, 38, 39, 40, 43, 46, 55, 57, 61, 66, 67, 68, 71, 74,
78, 79, 82, 83, 84, 85, 95, 96, 98, 101, 104, 105, 106, 109,
110, 111, 118, 121, 123, 125, 169, 175, 176, 187, 189

ANNEX I



hazardous waste marking, 24, 25, 50, 54, 78, 82, 104, 109
HAZMART, 27
host nation, 7, 13, 64, 69, 72, 82, 83, 84, 85, 87, 88, 95, 108,
110, 111, 112, 114, 115, 137, 176, 183, 189
host nation agreement, 67, 88, 95, 109, 110
human waste, 28, 38, 42, 66, 94, 122, 175

—I—

incineration, 41, 187
initial beddown, 7, 23, 37, 44, 61, 62, 72, 88, 100, 114, 117

—L—

landfill, 27, 41, 46, 47, 51, 56, 58, 69, 74, 75, 79, 84, 86, 97,
102, 106, 111, 112, 176, 187
laws, 5, 13, 14, 17, 19, 23, 35, 37, 38, 39, 41, 72, 84, 88, 110,
139, 140, 183

—M—

material safety data sheet (MSDS), 44, 46, 50, 51, 54, 57, 68,
72, 74, 78, 82, 85, 96, 99, 101, 105, 109, 111, 133, 142, 185

I

ANNEX



—N—

National Environmental Policy Act (NEPA), 60, 133, 138, 139, 140
 National Historic Preservation Act (NHPA), 141
 natural resources, 8, 9, 22, 31, 33, 37, 48, 5, 57, 58, 76, 80, 86, 107, 111, 113, 123, 124
 noise pollution, 34, 49, 59, 87, 118, 123, 124

—O—

Occupational Safety and Health Act (OSHA), 141
 OPLAN, 7, 15, 23, 24, 38, 45, 52, 59, 60, 65, 66, 73, 77, 80, 81, 87, 88, 94, 96, 100, 103, 108, 114, 133, 143, 144
 overseas, 5, 7, 10, 13, 17, 22, 23, 24, 31, 33, 34, 63, 66, 80, 81, 85, 87, 88, 89, 91, 93, 95, 103, 107, 111, 113, 114, 115, 143, 144, 191

—P—

penalties, 13, 15, 16
 personal protective equipment (ppe), 44, 72, 99, 125, 171
 pesticides, 21, 33, 38, 44, 48, 53, 59, 72, 76, 81, 87, 99, 103, 107, 113
 point of contact, 46, 74, 101
 pollution prevention, 5, 8, 9, 10, 32, 43, 48, 52, 59, 71, 76, 80, 86, 98, 103, 107, 113, 133, 140, 186
 predeployment, 7, 36, 60, 64, 65, 88, 92, 93, 114

I ANNEX



—R—

recycling, 8, 10, 19, 22, 32, 41, 48, 51, 52, 71, 148
redeployment, 8, 29, 36, 50, 54, 57, 62, 82, 85, 89, 108, 115, 177
Resource Conservation and Recovery Act (RCRA), 15, 55, 133, 140
responsibilities, 5, 15, 19, 38, 57, 66, 85, 94, 111, 117, 143
risk, 6, 8, 19, 21, 23, 24, 35, 39, 49, 52, 63, 67, 77, 91, 95, 104, 117, 118, 119, 120, 121, 123, 124, 145, 147, 171, 188

—S—

Safe Drinking Water Act (SDWA), 142
spill prevention, 29, 42, 47, 52, 58, 70, 75, 80, 86, 98, 102, 106, 112
source reduction, 10, 32
Status of Forces Agreement (SOFA), 13, 19, 114, 188
sustainment, 8, 21, 23, 32, 36, 49, 54, 62, 64, 77, 82, 89, 92, 104, 108, 115, 117, 125, 175

I**ANNEX****—T—**

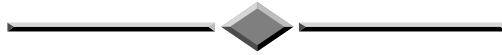
theater component, 15, 20, 22, 23, 27, 30, 63, 69, 73, 77, 78,
79, 82, 84, 88, 89, 97, 100, 104, 108, 113, 114, 143, 191
threatened species, 43, 71, 98
training, 5, 7, 11, 19, 21, 36, 39, 54, 61, 64, 67, 82, 95, 108,
139, 140, 142, 184

—U—

unit environmental coordinator, 22, 26, 30, 61, 68, 71, 78, 96,
104

—W—

waste disposal, 22, 27, 29, 32, 37, 41, 57, 69, 86, 97, 112, 115,
121
waste stream, 32, 40, 68, 96
wastewater, 5, 22, 28, 29, 42, 47, 56, 70, 75, 84, 97, 102, 110,
125, 184
water pollution, 42, 70, 118, 121, 123, 125
water supply, 8, 122
wetlands, 37, 43, 44, 57, 71, 72, 85, 98, 99, 111, 120, 121,
125, 141, 161, 162, 163



THIS PAGE IS INTENTIONALLY LEFT BLANK.

